



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



**National Competency Standards Level-2 for Mobile App, Web & Game Development
“Computer Assistant (Graphics & Web)”**



**National Vocational and Technical Training Commission (NAVTTC),
Government of Pakistan**



ACKNOWLEDGEMENTS

National Vocational and Technical Training Commission (NAVTTTC) extends its gratitude and appreciation to representatives of business, industry, academia, government agencies, provincial TEVTAs, sector skill councils and trade associations who spared time and extended their expertise for the development of National Vocational Qualification for the trade of **Mobile App, Web & Game Development**. This work would not have been possible without the technical support of the above personnel.

NAVTTTC initiated development of CBT&A based qualifications for 200 traditional / hi-tech trades under the Prime **Minister’s Hunarmand Pakistan Program**, focusing on Development & Standardization of 200 Technical & Vocational Education & Training (TVET) Qualifications. NAVTTTC efforts have received full support from the Ministry of Federal Education and Professional Training which highly facilitated progress under this initiative.

It may not be out of place to mention here that all the experts of Industry, Academia and TVET experts of TEVTAs, BTEs and PVTC work diligently for making this qualification worthy and error free for which all credit goes to them. However, NAVTTTC accepts the responsibility of all the errors and omissions still prevailing in the Qualification document.

It is also noteworthy that development of Skill Standards is a dynamic and ongoing process, and the developed skill standards needs periodic review and updating owing to the constant technological advancements, development in scientific knowledge, and growing experience of implementation at the grass root level as well as the demand of industry. NAVTTTC will ensure to keep the qualifications abreast with the changing demands of both national and international job markets.

Dr. Nasir Khan

Executive Director (NAVTTTC)



Table of Contents

1. Introduction	5
2. Purpose of the Qualification	6
3. Date of Validation	7
4. Date of Review.....	7
5. Codes of Qualifications	7
6. Members of Qualification Development Committee	8
7. Qualification Validation Committee	9
8. Minutes of Meetings.....	10
9. Entry Requirements	11
10. Regulation of the qualification and schedule of units	11
11. Generic Modules with respective levels	12
12. Mapping of the Qualification	13
13. Summary of competencies.....	14
14. Qualification Levelling and Packaging	16
1. Computer Assistant.....	17
0613-S&AD&A-1. Use system software.....	17
0613-S&AD&A-2. Use Application Software.....	19
0613-S&AD&A-3. Configure hardware components/peripheral devices	21
0613-S&AD&A-4. Draft office documents	24
0613-S&AD&A-5. Perform efficient web browsing and Manage emails	27
0613-S&AD&A-6. Troubleshoot network problems.....	29
2. Basics of Web development.....	31
0613-S&AD&A-7. Build a Webpage.....	31
0613-S&AD&A-8. Work with stylesheets.....	33
0613-S&AD&A-9. Add bootstrap to incorporate responsiveness	35
0613-S&AD&A-10. Test responsiveness of webpage	37
0613-S&AD&A-11. Debug the HTML and CSS code.....	39
3. Blogger.....	42
0613-S&AD&A-12. Identify your niche.....	42
0613-S&AD&A-13. Create BLOG	44
0613-S&AD&A-14. Generate, research, and pitch ideas for posts.....	46
0613-S&AD&A-15. Develop methods to attract new and existing readers	48



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



4.	<i>Graphic Designer</i>	50
0613-S&AD&A-16.	Explore Graphic Designing Tools.....	50
0613-S&AD&A-17.	Install Graphic Designing Tools.....	52
0613-S&AD&A-18.	Design Mock-ups for Webpages.....	54
0613-S&AD&A-19.	Design Mock-ups for Mobile Applications.....	56
0613-S&AD&A-20.	Design Mock-ups for Game Applications	58
0613-S&AD&A-21.	Perform Image Slicing	60
0613-S&AD&A-22.	Carry Out Branding Campaign	61
5.	<i>Health and Safety</i>	63
0613-S&AD&A-23.	Maintain occupational health and safety.....	63
0613-S&AD&A-24.	Maintain good health while using Computer/Digital devices at work	66



1. Introduction

The importance of modern gadgets in our everyday life and activities is undeniably unending. This is so because there is ongoing tremendous transformation in which mobile phones, laptops and other devices are no longer the ordinary device they used to be. They have become the colossal point of attention for individuals and businesses alike, courtesy of the various incredible features and opportunities that they offer. The cumulative progress of technology, the availability and access to high speed internet and the remarkable communicative interface in these devices results into a whole level of new and innovative experience.

Web designing is the computer field which deals with the creation of websites and web application. The person who deals with the creation of websites and web application is known as a web designer or web developer. The best part of being a web developer is that they are employed by almost every organization and they can even work independently as a freelancer.

Mobile phones and devices have become such a ubiquitous part of our everyday lives that it's difficult to imagine going through an entire day without one. This shift to ubiquity has been driven largely in part by the increasing scope of mobile application development. Over just the past few years an explosion in not just the scope but also the depth of utility of these devices has occurred which rivals, if not exceeds that seen in any other discrete class of technology.

Game Development is the art of creating games and describes the design, development and release of a game. It may involve concept generation, design, build, test and release. While you create a game, it is important to think about the game mechanics, rewards, player engagement and level design.

Being conscious of the emerging trends in the market, National Vocational & Technical Training Commission (NAVTTTC) has developed competency standards in consultation with the stakeholders including academia, researchers, industry, chambers and TEVTAs for **‘Mobile App, Web & Game Development’** under National Vocational Qualifications Framework (NVQF). The competency standards document has been designed in a way that trainees can develop skill in the ability to explore and analyze writing in technical, scholarly and professional contexts. They can consolidate their knowledge and skills through advanced practice in writing, editing, designing and producing texts for professional and technical purposes, with concrete application on industry sourced documents and projects.



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



The National Competency Standards could be used as a referral document for the development of curriculum to be used by training institutions.

2. Purpose of the Qualification

The purpose of this qualification is to set the highly professional standards for the Mobile App, Web & Game Development in order to compete local and international job market. The specific objectives of developing these qualifications are as under:

- Empower the youth with globally required employable skills.
- Produce competitive Web, Mobile App and Game Developers.
- Produce a skilled youth for Mobile App, Web & Game Development Industry.
- Improve the quality and effectiveness of the training and assessment for Mobile App, Web & Game Development Industry.



3. Date of Validation

The level 5 of National DAE qualification for ‘Mobile App, Web & Game Development’ has been validated by the Qualifications Validation Committee (QVC) members on 4th -8th August, 2020 and will remain valid for ten years i.e. **8th August, 2030**

4. Date of Review

The level 5 of National DAE qualification for ‘Mobile App, Web & Game Development’ has been validated by the Qualifications Validation Committee (QVC) members on 4th -8th August, 2020 and will remain valid for ten years i.e. **9th August, 2023**

5. Codes of Qualifications

The International Standard Classification of Education (ISCED) is a framework for assembling, compiling and analyzing cross-nationally comparable statistics on education and training. ISCED codes for these qualifications are assigned as follows:

ISCED Classification	
Code	Description
0613-S&AD&A(1)	1 st Level National Certificate of level-5, in “ Mobile App, Web & Game Development Technology”
0613-S&AD&A(2)	2 nd Level National Certificate of level-5, in “Mobile App, Web & Game Development Technology”
0613-S&AD&A(3)	3 rd Level National Certificate of level-5, in “Mobile App, Web & Game Development Technology”
0613-S&AD&A(4)	4 th Level National Certificate of level-5, in “Mobile App, Web & Game Development Technology”
0613-S&AD&A(5)	5 th Level National Certificate of level-5, in “Mobile App, Web & Game Development Technology”



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



6. Members of Qualification Development Committee

The following members participated in the qualification development process at PITAC, Lahore.

Date: 6th to 10th July'2020

S#	Name	Designation	Organization
1.	Mr. Atif Bashir	Faculty member CS/Visiting Faculty	NCBA&E Lahore/UCP Lahore
2.	Mr. Muzammil Hassan	Assistant Manager Research (Software Systems)	KICS UET Lahore
3.	Mr. Fahad Sabah	System/Business Analyst	Techno Dessert Lahore
4.	Mr. Tariq Aziz	System/Business Analyst	Soft Villa Solutions
5.	Mr. Ahmad Hassan	Sr. Web Developer	Black Urban Tech
6.	Mr. Goher Iqbal Punj	Faculty Member CS	KICS UET Lahore
7.	Mr. Muhammad Adrees	Assistant Professor CS	The University of Lahore
8.	Mr. Muhammad Imran Shafi	Assistant Professor CS	The University of Lahore
9.	Mr. Rehan Ahmad	Assistant Professor CS	The University of Lahore
10.	Ms. Syeda Farah Rehman	Sr. Instructor IT	P-TEVTA
11.	Ms. Fatima Iqbal	Representative of PBTE	PBTE
12.	Mr. Hafeez Abbasi	Director	S-TEVTA
13.	Mr. Aijaz Ahmed Zia	DACUM Facilitator/D&A Engr.	INTECH/UET Lahore
14.	Mr. Sikandar Masood	Director SS&C	NAVTTC



7. Qualification Validation Committee

The following members participated in the qualification development process at PITAC, Lahore.

Date: 4th to 8th August'2020

S#	Name	Status in Committee	Organization
1.	Ms. Amanullah Chaudhry	Representative of PBTE	PBTE
2.	Mr. Liaquat Ali Jamhro	Representative of S-TEVTA	Sindh-TEVTA
3.	Mr. Shadab Ali Shah	Representative of KP-TEVTA	KP-TEVTA
4.	Mr. Mushtaq Ahmed	Representative of P-TEVTA	Punjab-TEVTA
5.	Engr. Waqas Aziz	Representative of AJK-TEVTA	AJK-TEVTA
6.	Ms. Tehmina Amanat	Representative of PVTC	PVTC
7.	Mr. Muhammad Imran Shafi	Assistant Professor CS/Expert	The University of Lahore
8.	Mr. Rehan Ahmad	Assistant Professor CS/Expert	The University of Lahore
9.	Ms. Syeda Farah Rehman	Sr. Instructor IT/Expert	P-TEVTA
10.	Mr. Arsalan Chaudhry	Project Manager/ Industry	Tower Technologies
11.	Mr. Mohammad Noman	Web Developer/Industry	Corvit Systems Lahore
12.	Mr. Muzammil Hassan	Assistant Manager Research (Software Systems)/Industry	Sumico Technologies/KICS UET
13.	Mr. Aijaz Ahmed Zia	DACUM Facilitator/D&A Engr.	INTECH/UET Lahore
14.	Mr. Sikandar Masood	Director SS&C	NAVTTTC



National Competency Standards Level-2 for "Mobile App, Web & Game Development"



8. Minutes of Meetings



Report Regarding Validation of Competency Standards for National Vocational Qualifications Level 5 for Mobile App, Web and Game Development



Minutes of Meeting

A meeting of Qualification Review and Validation Committee for the trade of "Mobile App, Web and Game Development" was held at Pakistan Industrial Technical Assistance Center, Lahore from 4th – 8th August, 2020. The following activities took place during meeting:

1. Introduction of OP & CS file to the new participants
2. Detailed discussion regarding validation process
3. Consultation was made with the relevant industry experts to confirm the accuracy of the competency standards
4. Levels of competency standards were defined according to NVQF Level Descriptor
5. Prepared the mapping and packaging of CS as per expert's guidelines.
6. Assigned the credit hours for CS as per PBTE & NVQF guidelines.
7. Revision of competency standards as per Industry/TEVTAs /BTEs requirements.
8. Tools and equipment lists were revised as per industry requirements.
9. Time allocation for contact hours was discussed with the industry and academia representatives and adjusted accordingly.
10. Competency standards were packed in National Occupational Standards in 4 certifications of Levels 2, 3, 4 and 5 according to NVQF guidelines

The following experts has participated in the CS Review and Validation Committee meeting and showed their consent to validated competency standards as found them according to the requirements of the industry:

S#	Name	Status in Committee	Signatures
1)	Syeda Farah Rehman	Senior Instructor (IT), PTEVTA /Expert	
2)	Mr. Rehan Ahmad	CEO, ShopVilla.com /Expert	
3)	Muhammad Imran Shafi	Asstt. Prof.(CS Deptt) UOL/Expert	
4)	Mr. Amanullah Ch.	Representative of PBTE	
5)	Mr. Liaqat Jhamro	Representative of Sindh TEVTA	
6)	Mr. Shadab Ali Shah	Representative KP TEVTA	
7)	Mr. Mushtaq Ahmad	Representative of Punjab TEVTA	
8)	Engg. Waqas Aziz	Representative of AJK TEVTA	
9)	Ms. Tehmina Amanat	Representative of PVTC	
10)	Mr. Arsalan Ch.	Project Manager, Web Development Punjab Group of Colleges /Freelancer	
11)	Mr. Muhammad Noman	Web Developer / Industry	
12)	Mr. Muzzamil Hassan	Sumico Technologies / Industry	
13)	Mr. Aijaz Ahmed Zia	DACUM Facilitator	
14)	Mr. Sikandar Masood	Coordinator	



9. Entry Requirements

The entry for D.A. E National Certificate level 2, in ‘**Mobile App, Web & Game Development**’ are:

1. A person having **Matric certificate with Science/Arts subjects**

10.Regulation of the qualification and schedule of units

Not Applicable



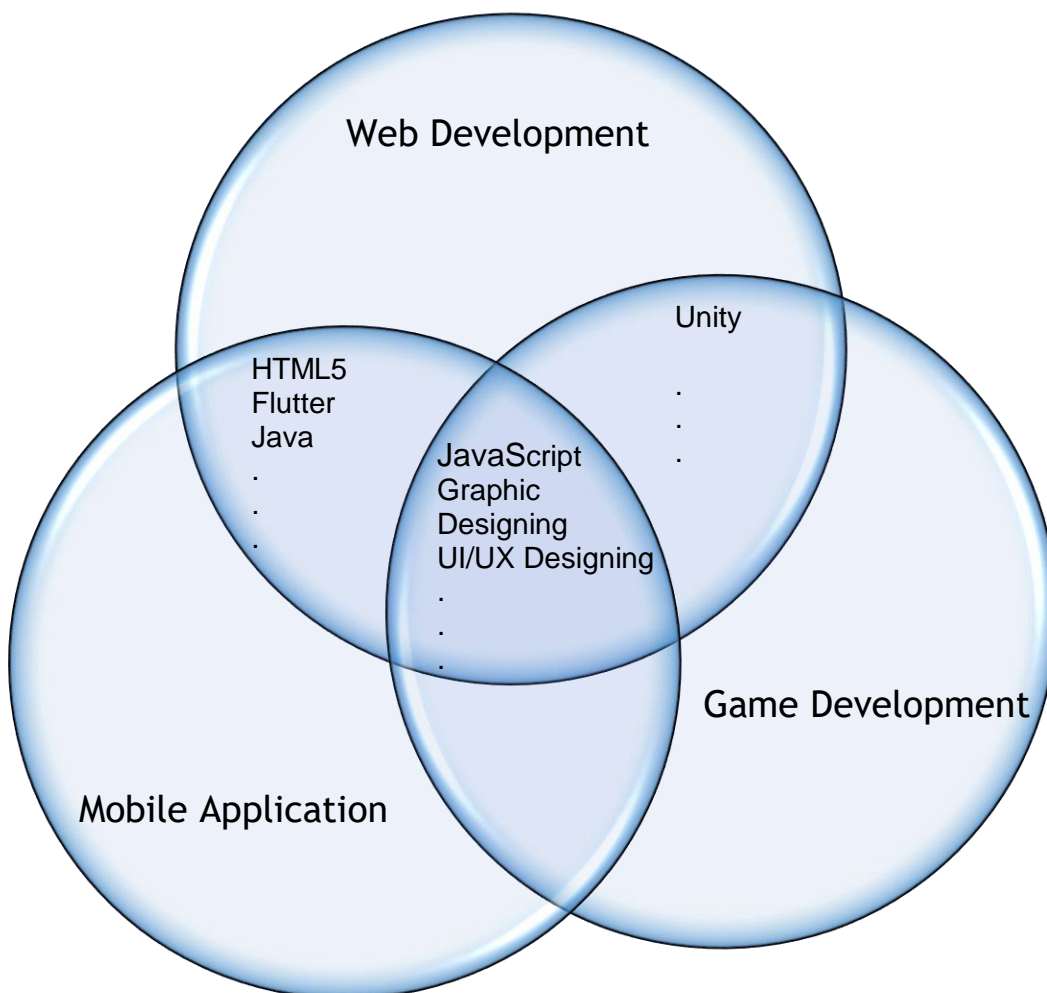
11. Generic Modules with respective levels

- | | |
|-----------------------------|---------|
| ▪ Health and Safety | LEVEL 2 |
| ▪ Digital Skills | LEVEL 3 |
| ▪ Soft Skills & Freelancing | LEVEL 4 |
| ▪ Entrepreneurship | LEVEL 5 |



12. Mapping of the Qualification

Mapping of the Qualifications





13. Summary of competencies

Sr No	Competency Standards	Occupation	NVQF Level	Cate gory	Estimated Contact Hours			Cr Hr
					Th	Pr	Total	
Level 2								
1	Use system software	Computer Assistant	2	Tech nical	6	24	30	3
2	Use application software		2	Tech nical	6	24	30	3
3	Configure hardware components/peripheral devices		2	Tech nical	6	24	30	3
4	Draft office documents		2	Tech nical	8	30	38	3.8
5	Perform efficient web browsing and manage emails		2	Tech nical	3	12	15	1.5
6	Troubleshoot network problems		2	Tech nical	3	12	15	1.5
7	Build a Webpage	Basics of Web development	2	Tech nical	6	24	30	3
8	Work with stylesheets		2	Tech nical	3	12	15	1.5
9	Add bootstrap to incorporate responsiveness		2	Tech nical	6	24	30	3
10	Test responsiveness of webpage		2	Tech nical	3	12	15	1.5
11	Debug the HTML and CSS code		2	Tech nical	3	12	15	1.5
12	Identify your niche	Blogger	2	Tech nical	3	12	15	1.5
13	Create BLOG		2	Tech nical	6	24	30	3
14	Generate, research, and pitch ideas for posts		2	Tech nical	6	24	30	3
15	Develop methods to attract new and existing readers		2	Tech nical	8	30	38	3.8
16	Maintain personal health while using digital devices	Health and Safety	2	Gene ric	5	15	20	2
17	Work safely in an office environment		2	Gene ric	3	12	15	1.5
18	Explore Graphic designing tools	Graphic Designer	2	Tech nical	4	15	19	1.9
19	Install Graphic designing tools.		2	Tech nical	6	24	30	3
20	Design mockups for web pages		2	Tech nical	6	24	30	3
21	Design mockups for Mobile applications		2	Tech nical	9	36	45	4.5
22	Design mockups for game applications		2	Tech nical	6	24	30	3
23	Perform Image Slicing		2	Tech nical	3	12	15	1.5
24	Carry out branding campaign		2	Tech	10	30	40	4



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



				nical				
	Total				128	492	620	62
	Percentage				20.64	79.35		
					5161	4838		
					29	7		

OCCUPATIONS AND LEVELS DESCRIPTOR-MOBILE APP,WEB & GAME DEVELOPMENT

Level 2



Level 3



Level 4



Level 5



S #	Occupations	No of Modules/CS	Level	Occupation Credit Hours	Training duration
1.	Computer Assistant	6	2	16	3 Months
2.	Basics of Web development	5	2	11	3 Months
3.	Blogger	4	2	11	3 Months
4.	Graphic Designer	7	2	21	6 Months



14. Qualification Levelling and Packaging

Level 2

(Computer Assistant, Basics of Web development, Blogger, Health and Safety, Graphic Designer)

Computer Assistant

1. Use system software
2. Use application software
3. Configure hardware components/peripheral devices
4. Draft office documents
5. Perform efficient web browsing and manage emails
6. Troubleshoot network problems

Basics of Web development

1. Build a Webpage
2. Work with stylesheets
3. Add bootstrap to incorporate responsiveness
4. Test responsiveness of webpage
5. Debug the HTML and CSS code

Blogger

1. Identify your niche
2. Create BLOG
3. Generate, research, and pitch ideas for posts
4. Develop methods to attract new and existing readers

Health and Safety

1. Maintain personal health while using digital devices
2. Work safely in an office environment

Graphic Designer

1. Explore Graphic designing tools
2. Install Graphic designing tools.
3. Design mockups for web pages
4. Design mockups for Mobile applications
5. Design mockups for game applications
6. Perform Image Slicing
7. Carry out branding campaign



15. Detail of Qualifications and its Competency Standards

A. Technical Competencies

1. *Computer Assistant*

0613-S&AD&A-1. Use system software

Overview: After this competency standard candidate will be able to install and configure system software / operating systems (windows/Linux) and resolve installation errors on computers.

Competency Unit	Performance Criteria
CU1. Install system Software	<p>P1. Check drive for previous OS installation.</p> <p>P2. Create drive backup (if required)</p> <p>P3. Format hard drive on system</p> <p>P4. Ensure Hard drive is empty after formatting.</p> <p>P5. Install operating system in the system by following instructional manual.</p> <p>P6. Troubleshoot installation errors</p>
CU2. Update /upgrade Sytem Software	<p>P1. Schedule operating system update</p> <p>P2. Run operating system update using internet</p> <p>P3. Download and run windows/application patches</p>
CU3. Use OS	<p>P1. Explore desktop environment</p> <p>P2. Create folders/directories</p> <p>P3. Open folders/directories and view files in desired format</p> <p>P4. Copy files, folder/ directories to different location (Hard drive, external storage, cloud)</p> <p>P5. Move files, folder/ directories to different location (Hard drive, external storage, cloud)</p> <p>P6. Rename files and directories/folder</p> <p>P7. Search files / folder/directories against various search criterion (File name, date, text etc)</p> <p>P8. Explore task Manager to view running process/tasks</p> <p>P9. Configure desktop settings</p>



Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- Define operating system
- Define various types of operating systems
- Describe the OS Installation process
- How to apply Operating system updates/patches

Tools and Equipment

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Computer System
2.	Internet Connection
3.	Operating System (Windows, Linux)
4.	Bootable OS Flash drive/CD

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Install operating system
- Resolve Installation errors.



0613-S&AD&A-2. Use Application Software

Overview: After this competency standard candidate will be able to install, configure and upgrade application software on computers.

Competency Unit	Performance Criteria
CU1. Install application Software	P1. Install application software in the PC/computers by following instructional manual. P2. Troubleshoot installation errors
CU2. Update application Software	P1. Check for the update P2. Update/upgrade application software
CU3. Install/Upgrade antivirus software	P1. Select appropriate antivirus software P2. Install antivirus software P3. Update antivirus database/repository P4. Update/upgrade antivirus software. P5. Schedule antivirus software update
CU4. Perform virus Scan	P1. Perform complete virus scan on any infected system. P2. Delete / quarantine all the viruses successfully which are detected as a result of scan.
CU5. Un-install application software	P1. Remove the application program P2. Make sure that the action is done from control panel.

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- Differentiate between system software and application software.
- Describe the benefits of software upgradation
- Define malicious software and its type.

Tools and Equipment



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Computer System
2.	Internet Connection
3.	Web Browser
4.	Search Engines
5.	Professional Office Suite (MS Office)/ Compatible office suite as per Operating System
6.	Application Softwares
7.	Antivirus software

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Install/Uninstall application software
- Install and run antivirus software



0613-S&AD&A-3. Configure hardware components/peripheral devices

Overview: After this competency standard candidate will be able to install and configure and trouble shoot hardware components/peripheral devices and device drivers on computers

Competency Unit	Performance Criteria
CU1. Establish safe work practices	<p>P1. Follow relevant legal requirements and OHS standards to the installation and maintenance of computer hardware</p> <p>P2. Apply requirements specified by hardware manufacturers</p> <p>P3. Follow safe work practices, taking into account legal and manufacturer requirements</p> <p>P4. Use appropriate accessories and tools.</p>
CU2. Install / configure Hardware components / peripheral devices	<p>P1. Identify the Hardware components / peripheral devices</p> <p>P2. Install appropriate drivers.</p> <p>P3. Configure hardware components / peripheral devices as per instructions manual</p> <p>P4. Take functional test for the installed Hardware components / peripheral devices.</p>
CU3. Update/Upgrade device driver	<p>P1. Scan computer for hardware changes.</p> <p>P2. Update/upgrade device driver</p> <p>P3. Make sure that updated features are in accordance with the specifications / requirements.</p> <p>P4. Take functional test for the Hardware components / peripheral device.</p>
CU4. Troubleshoot basic hardware errors/faults	<p>P1. Detect hardware errors/problems.</p> <p>P2. Identify solution of hardware errors.</p> <p>P3. Execute the hardware troubleshooting.</p> <p>P4. Verify that the hardware is functioning properly.</p>

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- Understands OHS policies and procedures in the carrying out the work.
- Understand hardware components / devices drivers
- Knowledge of Troubleshooting installation problems/errors.



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



Tools and Equipment

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Computer System
2.	Internet Connection
3.	Web Browser
4.	Search Engines
5.	LAN Connectivity
6.	Printer
7.	Scanner
8.	Web cam (digital camera)
9.	DVD or BLU-RAY writer
10.	Pen-drive
11.	External Hard disks
12.	Operating System (Windows, Linux)



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Install device drivers
- Troubleshoot hardware errors.



0613-S&AD&A-4. Draft office documents

Overview: After this competency standard candidate will be able to prepare office documents, take offline and online backups, perform files conversions efficiently.

Competency Unit	Performance Criteria
CU1. Prepare Word Document	<p>P1. Select appropriate word processing application</p> <p>P2. Create new document / open already existing word document</p> <p>P3. Set page Layout</p> <p>P4. Perform basic Formatting (text, paragraph, page)</p> <p>P5. Perform insert operation (picture, shapes, charts, tables, smart art, clip art, hyperlinks, page numbers, header/footers, bullets/numbering, columns) in the word document</p> <p>P6. Check the spellings in the word file through available dictionary</p> <p>P7. Save document</p> <p>P8. Print document</p>
CU2. Prepare Spreadsheet	<p>P1. Explore and select appropriate spreadsheet application</p> <p>P2. Create / open Spread Sheet</p> <p>P3. Set page Layout</p> <p>P4. Perform basic Formatting</p> <p>P5. Perform insert operation (picture, charts, smart art, clip art, hyperlinks, page numbers, header/footers, bullets / numbering) in the spread sheet</p> <p>P6. Insert / use arithmetic functions/formulas</p> <p>P7. Save Spreadsheet</p> <p>P8. Print Spreadsheet</p>
CU3. Prepare presentation	<p>P1. Select appropriate presentation tool.</p> <p>P2. Create / open presentation</p> <p>P3. Set page Layout</p> <p>P4. Perform basic Formatting</p> <p>P5. Perform insert operation (slides, picture, shapes, charts, tables, smart art, clip art, hyperlinks, page numbers, bullets/numbering) in the presentation.</p> <p>P6. Select various template designs</p> <p>P7. Apply animation to slides</p>



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



	<p>P8. Check the spellings in the presentation through available dictionary</p> <p>P9. Run the presentation</p> <p>P10. Save the presentation</p> <p>P11. Print the presentation</p>
CU4. Prepare In-page files	<p>P1. Set Keyboard preferences</p> <p>P2. Set page Layout</p> <p>P3. Perform basic Formatting in Inpage File</p> <p>P4. Toggle between languages</p> <p>P5. Perform insert operation (picture etc.) in the Inpage file</p> <p>P6. Insert Columns</p> <p>P7. Save Inpage File</p> <p>P8. Print Inpage File</p>
CU5. Backup office record and Maintain integrity of files	<p>P1. Manage electronic record's backup</p> <p>P2. Create backup on cloud based storage.</p> <p>P3. Verify the integrity of backup by restoring backup</p>
CU6. Convert Files	<p>P1. Identify file conversion software</p> <p>P2. Convert files into different formats</p> <p>P3. Use online convertor to give a practical demonstration</p>

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- Demonstrate proficiency in creating a Word Document.
- Describe spread sheets, use formulas and apply necessary formats
- Explain qualities of a robust presentation.
- Write a note on Urdu Word Processing.
- Learn about types of files and their conversions

Tools and Equipment

The tools and equipment required for this competency standard are given below:



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



S. No.	Items
1.	Computer System
2.	Internet Connection
3.	Search Engines
4.	Internet or LAN Connectivity
5.	Printer
6.	DVD or BLU-RAY writer
7.	Professional Office Suite (MS Office))/ Compatible office suite as per Operating System
8.	Inpage Software
9.	Application Softwares

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Create, open, save and print files
- Perform necessary formatting according to provided document format.
- Designs CVs
- Create result Sheet
- Make presentation
- Convert file to different formats



0613-S&AD&A-5. Perform efficient web browsing and Manage emails

Overview: After this competency standard candidate will be able perform searching on web using various search engines. The candidate shall be able to manage email accounts efficiently and use cloud services i.e Google drive, one drive, drop box etc.

Competency Unit	Performance Criteria
CU1. Perform Browsing	P1. Perform the components of browsing as per given instructions. P2. Surf through different browsers to search required data.
CU2. Download / upload Data	P1. Explore different downloading tools P2. Search and download required information. P3. Upload required information on cloud.
CU3. Create email accounts	P1. Create email accounts on various platforms. P2. Identify and remove Errors while Email configuration P3. Configure email account on outlook.
CU4. Sort emails	P1. Demonstrate sorting of emails on the PC P2. Perform successful sorting of emails as per instructions P3. Search email for a particular content
CU5. Manage Address Book	P1. Open address book. P2. Demonstrate the method of managing the address book by adding some contacts, removing contacts, importing, exporting, sorting and updating etc
CU6. Archive email	P1. Learn the procedure of Archiving Emails P2. Demonstrate practically the procedure of archiving emails, as per requirements
CU7. Send/Receive emails	P1. Compose emails using attachments P2. Demonstrate the procedure to send an email. P3. Demonstrate the procedure to receive an Email. P4. Print emails.

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



- How to use various browsers
- Describe types of search engines
- Describe management of emails on various platforms.
- How to configure email accounts on outlook
- Differentiate between downloading and uploading data

Tools and Equipment

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Computer System
2.	Internet Connection
3.	Web Browser
4.	Search Engines
5.	Operating System (Windows, Linux)
6.	Printer

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Configure email account on outlook.
- Compose an email



0613-S&AD&A-6. Troubleshoot network problems

Overview: After this competency standard candidate will be able to identify and resolve internet and LAN connectivity errors.

Competency Unit	Performance Criteria
CU1. Configure wireless Internet connectivity	P1. Configure basic internet connectivity of a system P2. Perform connectivity test successfully.
CU2. Configure LAN connectivity	P1. Configure basic LAN connectivity of a system P2. Perform connectivity test successfully.
CU3. Troubleshoot basic networking errors	P1. Communicate with help desk and other supporting services to quickly identify network problems P2. Use various tools and knowledge of network topology and protocols to identify network problems P3. Consult with vendor or service suppliers for assistance where appropriate

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- Write down note on resolution of LAN connectivity errors.
- Describe resolution of internet connectivity issues.

Tools and Equipment

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Computer System
2.	Internet Connection
3.	Web Browser
4.	Internet router/switch
5.	LAN Connectivity
6.	Operating System (Windows, Linux)



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Identify network connectivity errors and troubleshoot
- Identify internet connectivity issues and resolve.



2. Basics of Web development

0613-S&AD&A-7. Build a Webpage

Overview: This competency standard covers the skills and knowledge required to Build a Webpage.

Competency Unit	Performance Criteria
CU1. Create Head Section	<p>P1. Write code in between Starting tag <HTML> and Closing tag </HTML></p> <p>P2. Create head section using <Head></Head> tags</p> <p>P3. Use <Title></Title> tags to give a title to the webpage</p>
CU2. Prepare Body Section	<p>P1. Start Body Section using <Body></Body> tags right after the head section</p> <p>P2. Create headings using all six level heading <h1> - <h6> tags</p> <p>P3. Insert text content using paragraph tag <P></P></p> <p>P4. Insert image into the webpage using tag</p> <p>P5. Insert links using anchor tag <a></p> <p>P6. Create Ordered lists using , Unordered lists using tags</p> <p>P7. Create sections in the webpage using <DIV></DIV> tag</p> <p>P8. Use <Table></Table> tags to prepare tables</p> <p>P9. Insert media into the webpage using <Audio></Audio> and <Video></Video> tags</p> <p>P10. Create Forms using <Form></Form> tags</p>
CU3. Use Semantic HTML tags to prepare a layout for the webpage	<p>P1. Create Header using <Header></Header> tag</p> <p>P2. Create a Navigation bar using <Nav></Nav> tag</p> <p>P3. Prepare sections using <Section></Section> tag</p> <p>P4. Insert <Article></Article> tag to manage independent content.</p> <p>P5. Create footer section of the webpage using <Footer></Footer> tag</p> <p>P6. Save the file with .html file extension</p>

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



- Define, what is a HTML Tag.
- Describe the concept of paired tags in HTML.
- Differentiate between the Head and Body Section of a webpage

Tools and Equipment

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Computer System
2.	Browser
3.	Notepad, Notepad++, IDE
4.	Internet Connection

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Link two html files with each other.
- Insert image into a webpage.



0613-S&AD&A-8. Work with stylesheets

Overview: This competency standard covers the skills and knowledge required to Work with Stylesheets.

Competency Unit	Performance Criteria
CU1. Add Inline CSS	<p>P1. Change the font size and font style of Heading elements using CSS attributes to the tags</p> <p>P2. Add background color in the webpage</p> <p>P3. Apply different colors to the text</p> <p>P4. Create Borders around paragraph</p> <p>P5. Set margins and padding of the paragraph</p> <p>P6. Stylize the tables using CSS properties</p> <p>P7. Add style to links and lists elements</p> <p>P8. Apply inline styles to the image</p>
CU2. Apply Internal CSS	<p>P1. Insert <Style></Style> tag inside the head section</p> <p>P2. Add styles for heading, paragraph, image, list and table elements inside the <Style></Style> tag</p>
CU3. Link Stylesheet with the webpage	<p>P1. Prepare a stylesheet for the webpage.</p> <p>P2. Save the stylesheet with .css extension</p> <p>P3. Link the stylesheet with the HTML File.</p>

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- Write down the names of ways through which CSS be added in the webpage.
- Differentiate between HTML and CSS
- Describe the benefit of preparing external stylesheets



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



Tools and Equipment

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Computer System
2.	Browser
3.	Notepad, Notepad++, IDE
4.	Internet Connection

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Add Inline CSS to paragraphs.
- Adjust the width and height of an image through Internal CSS
- Link a stylesheet with HTML file.



0613-S&AD&A-9. Add bootstrap to incorporate responsiveness

Overview: After this competency standard candidate will be able to;

- Test the responsiveness of a website
- Display and align the content consistently
- Render text legibly on all scales and viewports

Competency Unit	Performance Criteria
CU 1. Setup Bootstrap	P1. Download Bootstrap P2. Load Bootstrap via CDN or host it locally P3. Load Bootstrap files
CU 2. Implement Bootstrap	P1. Create HTML Page P2. Add layout including Navigation Bar, Header, Footer, Content section etc. P3. Create content container P4. Add Form P5. Add Tabs and cards P6. Add Background Image P7. Add carousel

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- What is Bootstrap and how does it work?
- Describe different types of content containers
- Describe grid system of bootstrap
- Define different classes of bootstrap

Tools and Equipment

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Computer/Laptop



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



2.	Internet
3.	Bootstrap
4.	IDE (visual studio code, sublime etc.)

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Create a responsive web page for a particular scenario using bootstrap
- Create responsive web form for a particular scenario using bootstrap



0613-S&AD&A-10. Test responsiveness of webpage

Overview: After this competency standard candidate will be able to;

- Test the responsiveness of a website
- Display and align the content consistently
- Render text legibly on all scales and viewports

Competency Unit	Performance Criteria
CU1. Load web page on different screen sizes	P1. Identify different types of screens and hand held devices P2. Load the websites on each size of screen P3. Remove the horizontal scroll in the website
CU2. Test website on browser developer tool	P1. Identify different types of browser developer tool P2. Select suitable browser P3. Open browser tool by clicking F12 P4. Use selector tool to identify tag P5. Use "Toggle Device" toolbar to switch web page on different screen sizes P6. Explore Element Tab P7. Explore Console Tab P8. Explore Style Tab

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- Explain different components of web pages.
- What is viewport
- What is the use of viewport
- What is meant by breakpoint
- Explain different types of screens sizes in pixels
- Describe the tags of HTML, List them.
- Explain the CSS classes, selector types in CSS
- Explain the concept of media queries
- Explain Bootstrap and its usage



Tools and Equipment

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	IDE, editors like Notepad ++ , VSCode Editor etc
2.	Bootstrap, JQuery, HTML, CSS, Javascript
3.	Firefox, chrome, internet explorer, etc
4.	Search Engines like google
5.	Chrome web developer tool, Mozilla developer option

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Switch the website on different screen sizes through browser’s screen sizes
- Select different element of webpage through element selector tool
- Show respective css style of any element on browser developer tool



0613-S&AD&A-11. Debug the HTML and CSS code

Overview: After this competency standard candidate will be able to

- Debug the front-end ; HTML/CSS
- turn browser into IDE — dynamically edited HTML/CSS
- HTML breakpoints
- change element state
- searching for specific elements
- practice new skills on real-life examples
- understand styles in the Elements tab
- learn the basics of what browser DevTools are, and how to do simple inspection and editing of CSS.

Competency Unit	Performance Criteria
CU1. Load webpage on Browser DevTools	<p>P1. Run website on any browser like chrome preferably</p> <p>P2. Select More Tools > Developer Tools from chrome/web browser Main Menu.</p> <p>P3. Right-click a page element and select Inspect.</p> <p>P4. Press Command+Option+I (Mac) or Control+Shift+I (Windows, Linux).</p>
CU2. Debug the front-end : HTML	<p>P1. Open chrome browser press F12</p> <p>P2. Use selector tool to identify tag</p> <p>P3. Use “Toggle Device” toolbar to switch web page on different screen sizes</p> <p>P4. Open Element Tab</p> <p>P5. Click Inspect Data object model - DOM</p> <p>P6. Find Unclosed Tags</p> <p>P7. Add Closed tag if needed</p> <p>P8. Identify badly nested elements</p> <p>P9. Correct badly nested elements</p> <p>P10. Run website on W3C Markup validation service to validate the website</p> <p>P11. Find errors by validating the site</p>



	P12. Fix errors
CU3. Debug the front-end: CSS	<p>P1. Open chrome browser press F12</p> <p>P2. Use selector tool to identify tag</p> <p>P3. Use “Toggle Device” toolbar to switch web page on different screen sizes</p> <p>P4. Open Element Tab</p> <p>P5. Click Inspect Data object model – DOM</p> <p>P6. Click on element tab</p> <p>P7. Click on style tab on right side</p> <p>P8. Add/Edit the selected class of css</p> <p>P9. Click on Computed Tab</p> <p>P10. Find issue by Mouse over on box model to explore the sections of web elements and divs</p> <p>P11. Fix issue by editing the css class</p> <p>P12. Run website on W3C Markup validation service to validate the website</p> <p>P13. Find errors by validating the site</p> <p>P14. Fix errors</p>

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- Explain different components of web pages.
- What is viewport
- What is the use of viewport
- What is meant by breakpoint
- What is box Model
- What is W3C markup validation service
- Describe the tags of HTML, List them.
- Explain the CSS classes, selector types in CSS
- Explain the concept of media queries

Tools and Equipment



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	IDE, editors like Notepad ++ , VSCode Editor etc
2.	Bootstrap, JQuery, HTML, CSS
3.	Firefox, chrome, internet explorer, etc
4.	Search Engines like google
5.	Chrome web developer tool, Mozilla developer option

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Switch the website on different screen sizes through browser’s screen sizes
- Display different element of webpage through element selector tool
- Show respective css style of any element on browser developer tool
- Identify the sections of webpage through box model



3. Blogger

0613-S&AD&A-12. Identify your niche

Overview: After this competency standard student will be able to identify his/her niche (area of interest) like food, travel, fashion, automobile etc.

Competency Unit	Performance Criteria
CU1. Research on topic	<p>P1. Open search engine (Google, Yahoo, Bing etc).</p> <p>P2. Search for top blogging topics</p> <p>P3. In the resulting topics, find the one that suits / attracts you most</p>
CU2. Filter the researched topics	<p>P1. Classify the researched niches based on different criteria. like personal liking, social norms, demographics, etc.</p> <p>P2. Select most appropriate class of niche among them.</p>
CU3. Find your competitors	<p>P1. Search your local competitors within your niche.</p> <p>P2. Search your global competitors within your niche.</p> <p>P3. Find out the work of your competitors in local and international market</p>
CU4. Perform competitive analysis	<p>P1. Compile the attributes of work done by your competitors</p> <p>P2. Identify the competitive edge</p> <p>P3. Find cost per click (CPC) using keyword planner like the Google Keyword Planner</p> <p>P4. Find Keyword Difficulty (KD) level using keyword planner like the Google Keyword Planner</p>

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- Understand Search Engines and their working.
- Define important terminologies related to blogging like niche, keyword, CPC and CTR etc.
- Differentiate between keyword difficulty levels.
- Describe competitive analysis

Tools and Equipment



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



The tools and equipment required for this competency standard are given below:

S. No.	Items'
1.	Web Browser
2.	Search Engines (google, bing, yahoo)
3.	Google Keyword Planner
4.	Moz

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Define the term niche
- Identify his area of strength
- Understands traffic production and traffic analysis
- Identify the potential of niche
- Identify keywords matching his niche
- Mention the difficulty levels of different keywords



0613-S&AD&A-13. Create BLOG

Overview: After the completion of this competency standard candidate will be able to explore different platforms that provide blogging services and able to create blog.

Competency Unit	Performance Criteria
CU1. Search Blogging Platform	<p>P1. Search different free blog platform like blogger, WordPress, WIX, Tumblr etc</p> <p>P2. Compare features of these platform include free and paid.</p> <p>P3. Select appropriate blog site.</p>
CU2. Explore working of blogging platform	<p>P1. Explore the interface of the selected blogs sites</p> <p>P2. Learn the working of their features and tools</p>
CU3. Create Blog	<p>P1. Sign up at selected blog site for login purpose in future</p> <p>P2. Create new Blog</p> <p>P3. Set name/title of the blog</p> <p>P4. Write description of the blog</p> <p>P5. Use images for the blog like logo</p> <p>P6. Able to edit blog information</p>

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- Define Blog
- Elaborate blog platform/site
- Differentiate between free and paid blog sites
- Describe Domain
- Elaborate Web hosting and its services
- Define Uniform Resource Locator

Tools and Equipment

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Web browser
2.	Search Engines
3.	Word Press



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



4.	WIX
5.	Blogger
6.	Tumblr

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Understands the process of creating blogs
- Knows few famous blogging platforms
- Incorporates different features in a blog



0613-S&AD&A-14. Generate, research, and pitch ideas for posts

Overview: After this competency standard candidate will be able to generate ideas regarding blog post and able to research about that. Candidate will also be able to pitch his/her idea.

Competency Unit	Performance Criteria
CU1. Research the idea	<p>P1. Research for latest and hot topics for blog posts</p> <p>P2. Identify keywords for Title</p> <p>P3. Search keywords for contents</p> <p>P4. Search keywords for tags</p>
CU2. Select eye caching title	<p>P1. Search different titles to attract audience.</p> <p>P2. Identify focus keywords that can be used in title.</p> <p>P3. Relate title with the idea of post.</p>
CU3. Create content for the idea	<p>P1. Use focus keyword in H1 (Heading style).</p> <p>P2. Prepare textual content of the post in effective manners to narrate the whole idea</p> <p>P3. Use textual, images and infographics in the contents of the idea</p> <p>P4. Use ALT keywords in image</p> <p>P5. Relate Latent Semantic Index (LSI) keywords in the contents</p> <p>P6. Design images for the contents</p>
CU4. Add keywords in Tags	<p>P1. Search your local competitors within your niche.</p> <p>P2. Search your global competitors within your niche.</p> <p>P3. Find out the work of your competitors in local and international market</p>

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- Understand title of the Post
- Understand description of the post
- Define infographics
- Illustrate Latent Semantic Indexing (LSI)

Tools and Equipment

The tools and equipment required for this competency standard are given below:



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



S. No.	Items
1.	Canva (Online Image Designing Tool)
2.	LSIgraph (https://lsigraph.com/)
3.	Google Keyword Planner
4.	Moz

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Hunt LSI keywords for the content
- Design infographics for the idea
- List down the important sections of the content



0613-S&AD&A-15. Develop methods to attract new and existing readers

Overview: After this competency standard candidate will be able to develop methods to attract the readers of blogs by using different promotion mechanisms.

Competency Unit	Performance Criteria
CU1. Promote posts through social media	<p>P1. Design the content for the post</p> <p>P2. Research potential social media platforms</p> <p>P3. Publish post on social media platforms</p> <p>P4. Boost the post if needed</p>
CU2. Promote posts through email marketing	<p>P1. Design the content/newsletter for email</p> <p>P2. Generate list of potential recipients from different sources</p> <p>P3. Send email</p>
CU3. Promote posts through sms marketing	<p>P1. Design textual content for sms</p> <p>P2. Generate list of potential recipients from appropriate sources</p> <p>P3. Send sms</p>
CU4. Perform SEO	<p>P1. Identify the famous search engines</p> <p>P2. Identify the keywords related to post</p> <p>P3. Index post in search engine using different tools</p> <p>P4. Determine blog optimization through SEO tools including responsiveness and page load speed</p>

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- Define Social Media
- List the popular social media platforms
- Define SEO
- Describe different SEO tools
- Elaborate SEO optimization
- Discuss SEO Optimization attributes
- List important sources of SEO

Tools and Equipment

The tools and equipment required for this competency standard are given below:



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



S. No.	Items
1.	Computer System
2.	Internet Connection
3.	Web Browser
4.	Search Engines
5.	Email server/sites
6.	SMS services
7.	Google Webmaster
8.	Page Speed Insight by Google

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Design the content to promote a post for the blog
- Prepare the list of most appropriate list of social media platforms for your blog promotion
- Must know how to write and send email to the targeted audience of your blog post
- Must know the sources where you can collect the information of your post audience



4. Graphic Designer

0613-S&AD&A-16. Explore Graphic Designing Tools

Overview: This competency standard covers the skills and knowledge required to explore graphic designing tools.

Competency Unit	Performance Criteria
CU1. Familiarize with Graphic Designing Tools	P1. Search designing tools being used in the industry P2. Explore features of graphic designing tools
CU2. Select Best Tools for Designing	P1. Select the best tools for designing purposes. P2. Categorize the tools according to their purposes.

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- Describe comprehensive knowledge of the designing tools.
- Give examples of graphic designing tools
- List down features of graphic designing tools

Tools and Equipment

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Desktop computer or laptop
2.	Graphic designing tools
3.	Search engine
4.	High speed Internet

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



- Show familiarity with the designing tools available in the market.
- Demonstrate the skills to figure out the best designing tools for various purposes.



0613-S&AD&A-17. Install Graphic Designing Tools

Overview: This competency standard covers the skills and knowledge required to install graphic designing tools.

Competency Unit	Performance Criteria
CU1. Download Designing Tools	<p>P1. Explore all required free and paid designing tools/software</p> <p>P2. Select the appropriate tools</p> <p>P3. Download the selected tools</p>
CU2. Install Designing Tools	<p>P1. Choose relevant photo-editing or designing software according to work nature.</p> <p>P2. Explore designing tools in Windows Apps (free and paid).</p> <p>P3. Install the chosen ones for assigned designing tasks.</p>

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- Comprehensive knowledge of the designing tools available in the market and in Microsoft Apps.
- Differentiate between the paid and free versions of designing tools.

Tools and Equipment

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Desktop computer or laptop
2.	Graphic designing tools
3.	Search engine
4.	High speed Internet

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Show knowledge of all available and much in demand designing tools or photo editing software



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



- Reveal skills to choose the best designing software needed for various purposes.
- Show ability to download the tools.
- Demonstrate how to install and uninstall the software.



0613-S&AD&A-18. Design Mock-ups for Webpages

Overview: This competency standard covers the skills and knowledge required to design mock-ups for webpages.

Competency Unit	Performance Criteria
CU1. Design a Wireframe	<p>P1. Search for the best available tools for designing a wireframe.</p> <p>P2. Download and install the tools</p> <p>P3. Design the wireframe of the product.</p>
CU2. Organize Information Architecture	<p>P1. Organize website content on the webpage such as information for the product on which website is being designed.</p> <p>P2. Put information in logical and hierarchical manner.</p>
CU3. Enhance User Experience	<p>P1. Draft the information for better user interaction.</p> <p>P2. Place the information or content for easy navigation.</p>
CU4. Arrange Visual Hierarchy (Layout)	<p>P1. Design all elements in order on the webpage(s).</p> <p>P2. Put all elements (content) on the webpage(s) properly according to their sizes.</p> <p>P3. Organize everything on the webpage(s) appropriately by positioning them and providing them well needed space.</p>
CU5. Select an Attractive Color Scheme	<p>P1. Select the color scheme to be used on the webpage(s) according to the niche and client requirement.</p> <p>P2. Choose those colors in a style that become interactive and attention-grabbing for the viewers.</p> <p>P3. Arrange it in a manner that will be used in the final product.</p>
CU6. Place Typography in Design	<p>P1. Collect the fonts with their types and sizes.</p> <p>P2. Make the fonts (text) bold and un-bold accordingly.</p> <p>P3. Adjust the text into the design to make it appealing for the viewers.</p> <p>P4. Arrange it in a manner that will be used in the final product.</p>
CU7. Prepare Final Mock-up	<p>P1. Collect SVG (file format) images</p> <p>P2. Use SVG images in the mock-up preparation</p> <p>P3. Use high quality images (other than SVG) in the mock up preparation</p> <p>P4. Arrange mockups as per requirement</p> <p>P5. Make your navigation clickable for best user testing</p>



Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- What is wireframing? How it is used?
- Explain color theory.
- Understanding of different file formats regarding different tools.
- Understanding of using all wireframes and mock-up designing tools.
- Differentiate between the paid and free versions of designing tools.

Tools and Equipment

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Desktop computer or laptop
2.	Graphic Designing Tools
3.	Search engine
4.	Internet connectivity

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Create an interactive mock up for a particular scenario



0613-S&AD&A-19. Design Mock-ups for Mobile Applications

Overview: This competency standard covers the skills and knowledge required to design mock-ups for mobile applications.

Competency Unit	Performance Criteria
CU1. Design a Wireframe	<p>P1. Search for the best available tools for designing a wireframe.</p> <p>P2. Download and install the tools</p> <p>P3. Design the wireframe of the product.</p>
CU2. Organize Information Architecture	<p>P1. Organize website content on mobile applications such as information for the product on which the app is being designed.</p> <p>P2. Put information in logical and hierarchical manner.</p>
CU3. Enhance User Experience	<p>P1. Draft the information for better user interaction.</p> <p>P2. Place the information or content for easy navigation.</p>
CU4. Arrange Visual Hierarchy (Layout)	<p>P1. Design all elements in order on mobile applications.</p> <p>P2. Put all elements (content) on mobile applications properly according to their sizes.</p> <p>P3. Organize everything on mobile applications appropriately by positioning them and providing them well needed space.</p>
CU5. Select an Attractive Color Scheme	<p>P1. Select the color scheme to be used on mobile applications according to the requirement.</p> <p>P2. Choose those colors in a style that become interactive and attention-grabbing for the viewers.</p> <p>P3. Arrange it in a manner that will be used in the final product.</p>
CU6. Place Typography in Design	<p>P1. Collect the fonts with their types and sizes.</p> <p>P2. Make the fonts (text) bold and un-bold accordingly.</p> <p>P3. Adjust the text into the design to make it appealing for the viewers.</p> <p>P4. Arrange it in a manner that will be used in the final product.</p>
CU7. Arrange Images	<p>P1. Collect and use SVG images to use in the mock-up which mirror exactly the ones to be used in final product.</p> <p>P2. Collect and use high quality images (other than SVG) to use in the mock-up which mirror exactly the ones to be used in final product.</p>
CU8. Make Interactive and Clickable Mock-up	<p>P1. Make your mock-up mobile app interactive.</p> <p>P2. Make your navigation clickable for best user testing.</p>



Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- Knowledge of the designing software or tools for wireframes and how to download and install them.
- Differentiate between the paid and free versions of designing tools.
- Knowledge of designing the mock-ups for webpage(s) thoroughly.
- Understanding of using all wireframes and mock-up designing tools.

Tools and Equipment

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Desktop computer or laptop
2.	All popular and best in use wireframe and mock-up designing tools
3.	Search engine
4.	High speed Internet
5.	Printer

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Show knowledge of all available and much in demand designing tools for wireframes
- Showcase knowledge of all available and much in demand designing tools for mock-ups.
- Show ability to download the tools.
- Demonstrate how to install and uninstall the software.
- Provide proof of a wireframe design for mobile applications
- Provide proof of a mock-up design for mobile applications



0613-S&AD&A-20. Design Mock-ups for Game Applications

Overview: This competency standard covers the skills and knowledge required to design mock-ups for game applications.

Competency Unit	Performance Criteria
CU1. Design a Wireframe	<p>P1. Search for the best available tools for designing a wireframe.</p> <p>P2. Download and install the tools</p> <p>P3. Design the wireframe of the product.</p>
CU2. Organize Information Architecture	<p>P1. Organize website content on game applications such as information for the product on which website is being designed.</p> <p>P2. Put information in logical and hierarchical manner.</p>
CU3. Enhance User Experience	<p>P1. Draft the information for better user interaction.</p> <p>P2. Place the information or content for easy navigation.</p>
CU4. Arrange Visual Hierarchy (Layout)	<p>P1. Design all elements in order on game applications.</p> <p>P2. Put all elements (content) on game applications properly according to their sizes.</p> <p>P3. Organize everything on game applications appropriately by positioning them and providing them well needed space.</p>
CU5. Select an Attractive Color Scheme	<p>P1. Select the color scheme to be used on game applications according to the requirement.</p> <p>P2. Choose those colors in a style that become interactive and attention-grabbing for the viewers.</p> <p>P3. Arrange it in a manner that will be used in the final product.</p>
CU6. Place Typography in Design	<p>P1. Collect the fonts with their types and sizes.</p> <p>P2. Make the fonts (text) bold and un-bold accordingly.</p> <p>P3. Adjust the text into the design to make it appealing for the viewers.</p> <p>P4. Arrange it in a manner that will be used in the final product.</p>
CU7. Arrange Images	<p>P1. Collect and use SVG images to use in the mock-up which mirror exactly the ones to be used in final product.</p> <p>P2. Collect and use high quality images (other than SVG) to use in the mock-up which mirror exactly the ones to be used in final product.</p>
CU8. Make Interactive and Clickable	<p>P1. Make your mock-up game applications interactive.</p> <p>P2. Make your navigation clickable for best user testing.</p>



Mock-up

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- Understanding of the available designing software or tools for wireframes and how to download and install them.
- Describe competency in differentiating the difference between the paid and free versions of designing tools.
- Knowledge of designing the mock-ups for game applications thoroughly.
- Understanding of using all wireframes and mock-up designing tools.

Tools and Equipment

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Desktop computer or laptop
2.	All popular and best in use wireframe and mock-up designing tools
3.	Search engine
4.	High speed Internet
5.	Printer

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Show knowledge of all available and much in demand designing tools for wireframes
- Showcase knowledge of all available and much in demand designing tools for mock-ups.
- Show ability to download the tools.
- Demonstrate how to install and uninstall the software.
- Provide proof of a wireframe design for game applications
- Provide proof of a mock-up design for game applications



0613-S&AD&A-21. Perform Image Slicing

Overview: This competency standard covers the skills and knowledge required to slice images.

Competency Unit	Performance Criteria
CU1. Divide the image into smaller images	P1. Select the image(s) for slicing P2. Plan the slicing as per requirement P3. Select the slicing tool (e.g. Firework,photoshop etc.) P4. Slice the image as per requirement P5. Save the sliced image with proper name in desired location
CU2. Prepare deliverable Sliced Images for Web Developer	P1. Arrange sliced images P2. Prepare html of sliced images

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- List down the available slicing tools.
- Differentiate between the paid and free versions of slicing tools.

Tools and Equipment

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Desktop computer or laptop
2.	Slicing tools
3.	Search engine
4.	High speed Internet

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Download and install slicing tools.
- Slice the images as per instructions



0613-S&AD&A-22. Carry Out Branding Campaign

Overview: This competency standard covers the skills and knowledge required to carry out branding campaign regarding mobile and web applications.

Competency Unit	Performance Criteria
CU1. Design Campaign Theme	P1. Select the color scheme P2. Select Typograhly (font, size etc.) P3. Finalize campaign design theme
CU2. Design Pop-Ups and Banners	P1. Create a design for the pop-up of the given size P2. Design Banners of different sizes for website, mobile application, facebook and google campaigns. P3. Use simple and easy text into design.
CU3. Make Campaigns More Inviting	P1. Use illustrations and images to highlight the product/service. P2. Create graphics to convey your information.
CU4. Design Appealing and Catchy Infographics	P1. Gather the complete requirements for infographic design P2. Create a visual content as per requirements P3. Use visual contents in design P4. Design in a way that it conveys your message properly
CU5. Design Atractive Stories for social media	P1. Gather requirement for social media stories from the customers P2. Create a strong design for social media with most engaging stories and gripping images of the product/services. P2. Design moving/animated images to share on Instagram and Facebook stories.

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- Command over branding campaigns.
- Describe competency in designing pop-up ads.
- Proficiency in designing animated images.
- Showcasing dexterity in generating stories on Instagram and Facebook.

Tools and Equipment

The tools and equipment required for this competency standard are given below:



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



S. No.	Items
1.	Desktop computer or laptop
2.	Designing tools
3.	Search engine
4.	Internet

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Design banners and pop-ups as per requirement.
- Provide ways to make gripping social stories.



B. Generic Competencies

5. *Health and Safety*

0613-S&AD&A-23. Maintain occupational health and safety

Overview:

After this Competency Standard, the trainee will be able to develop skill and competence required to maintain Occupational Health and Safety and take remedial measures to deal with the emergencies in a professional manner, thus minimizing the losses and providing a safe and healthy working environment.

Competency Units	Performance Criteria
CU1. Maintain First-aid Box	P1. Ensure availability of first aid box P2. Check first aid box for requisite emergency P3. Check expiry of medicines P4. Perform first aid treatment against electric shocks P5. Perform first aid treatment/bandages against minor injuries.
CU3. Maintain Fire Extinguisher	P1. Check expiry of fire extinguisher P2. Operate fire extinguisher P3. Replace fire extinguisher P4. Ensure that the fire brigade is at stand by(for major emergency)
CU4. Ensure Safeguard of Machines	P1. Maintain radiator shield P2. Maintain alternator fan shield P3. Maintain heat resister material on silencer P4. Cover main circuit breaker P5. Lock canopy doors
CU5. Adopt company policies and procedures	P1. Ensure company's safety policy P2. Adopt company safety procedure P3. Advocate worker with company safety policy P4. Implement Safety sign board as per standard
CU6. Attain health & safety training	P1. Take required health and safety training P2. Implement work hazardous material information system (WHMIS) P3. Adopt first aid cardio respiratory, resuscitation and CPR
CU7. Prepare for	P1. Take emergency response training



emergencies	P2. Ensure practice of emergency exercises P3. Check the emergency alarms P4. Ensure regular practice of gathering the workers in assembly area during the emergency.
CU8. Respond to emergencies	P1. Follow emergency plan P2. Communicate instructions to co workers P3. Assess risk and determine course of action P4. Operate emergency equipment and supplies P5. Ensure that the ambulance is at stand by(for emergency)

Knowledge & Understanding

- Factors affecting Health & Safety in the workplace.
- First-Aid-Box.
- Emergency medicines and expiry
- Methods of treatment against electric shock
- Methods of treatment against minor injuries
- Types of Fire Extinguisher
- Uses of Fire Extinguisher
- Company policies and procedures
- Understand various safe guards
- Safety measures
- Work permit/no objection certificate(NOC)
- Types of work site Hazards
- Hazardous chemical control procedures
- Methods of first aid cardio respiratory Procedure
- Types of emergencies
- Response various types of emergencies
- Emergency equipment, supplies and their operation
- Methods of communication during
- emergency

Tools and Equipment

SN	Tools
1	First Aid Box
2	First Aid Kit



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



3	Stretcher
4	Fire Buckets
5	Fire Extinguisher
6	Emergency Alarm/Bell
7	Emergency response Plan
8	Fall Protection Plan

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Types of hazards that are most likely to cause harm to health and safety
- Health and safety signs and precautions
- Techniques and methods to identify the risks of hazards at workplace
- Safety reporting procedures and documentation
- Describe fire-fighting methods



0613-S&AD&A-24. Maintain good health while using Computer/Digital devices at work

Overview: After this competency standards, the trainee will be able to avoid eye strain, headaches and maintain good posture at workplace.

Competency Unit	Performance Criteria
CU1. Avoid Eye Strain and Headaches	<p>P1. Reposition the screen to avoid glare from lights or windows.</p> <p>P2. Keep the screen clean and use a desk lamp to make it easier to see.</p> <p>P3. Ensure the screen colours are easy to look at, and that the characters are sharp and legible.</p> <p>P4. Look away from the screen into the distance for a few moments to relax your eyes(e.g. focus on something 30 metres away for 30 seconds every 30 minutes)</p>
CU2. Maintain good posture	<p>P1. Maintain a straight sitting posture</p> <p>P2. Stand up and walk around every hour or so, so that you're not sat in the same position all day.</p> <p>P3. Slowly lean your torso over to one side of the chair and then the other to stretch your sides and spine.</p> <p>P4. Stand up and put your hands together, elbows out, then slowly twist to the left and then to the right.</p>

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard.

- Define problems faced while working on computer for longer duration.
- Explain different sitting posture

Tools and Equipment

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Laptop / Desktop Computer
2.	Cleaning Cloth/Tissue

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:



National Competency Standards Level-2 for “Mobile App, Web & Game Development”



- Demonstrate safety precautions while using computer