Republic of Rwanda
Ministry of Education

RTB | RWANDA TVET BOARD

VERSION CONTROL

SWDVC301

CONDUCT VERSION CONTROL

Competence

RQF Level: 3

Learning Hours

Credits: 7

70

Sector: ICT AND MULTIMEDIA

Trade: SOFTWARE DEVELOPMENT

Module Type: Specific

Curriculum: ICTSWD3002 - TVET Certificate III in Software Development

Issue Date: June, 2022

1200

<table>
<tr><td>Purpose statement</td><td colspan="6">This specific module describes the skills required to apply version control during software development in a team.

Upon completion of this module, the learner will be able to: Setup repository, Manipulate files, Ship codes.</td></tr>
<tr><td rowspan="6">Delivery modality</td><td>Training delivery</td><td colspan="2">100%</td><td>Assessment</td><td colspan="2">Total 100%</td></tr>
<tr><td colspan="2">Theoretical content</td><td>15%</td><td rowspan="4">Formative assessment</td><td>15%</td><td rowspan="4">50%</td></tr>
<tr><td colspan="2">Practical work:</td><td rowspan="3">85%</td><td rowspan="3">85%</td></tr>
<tr><td>● Group project and presentation</td><td>35%</td></tr>
<tr><td>● Individual project /Work</td><td>50%</td></tr>
<tr><td colspan="2"></td><td colspan="3">Summative/Integrated Assessment</td><td>50%</td></tr>
</table>

Elements of Competency and Performance Criteria

Elements of competency	Performance criteria
1. Setup repository	1.1 Git is introduced based on version control
	1.2 Git is properly initiated based on Git commands
	1.3 Repository is properly created based on the project.
	1.4 Remote URL is properly set in accordance with Git commands
2. Manipulate files	2.1 File changes are properly added according to Git commands
	2.2 File changes are properly committed based on added files
	2.3 Branches are properly managed based on the project
3. Ship codes	3.1 Files are properly fetched in accordance with Git instruction
	3.2 Files are properly pushed to remote branch based on committed files
	3.3 Branches are properly merged based on pull request created

Course content

Learning outcomes	At the end of this module learner will be able to: 1. Setup repository 2. Manipulate files 3. Ship codes
Learning outcome 1: Setup repository	**Learning hours: 20hours**

Indicative content

- Definition of general key terms
  - ✓ Version control
  - ✓ Git
  - ✓ GitHub
  - ✓ Terminal
- **Introduction to version control**
  - ✓ Types of version control
    - Local version control
    - Centralized version control system
    - Distributed version control
  - ✓ Well Known version control system
    - Git
    - CVS (Concurrent Version System)
    - mercurial
    - SVN(subversion)
  - ✓ Benefits of Version control
  - ✓ Application of version control
- Description of git
  - ✓ Git Basic concept
  - ✓ Git architecture
  - ✓ Git workflow
  - ✓ Initialisation of Git
    - Terminal Basic commands
    - Installation of Git Setup
  - ✓ Configure Git
    - Git init command
    - Git config command
    - Git – version command

- ✓ Configure .git ignore file

- **Use of GitHub repository**
  - ✓ Description of GitHub
  - ✓ Create account on GitHub
  - ✓ Create new remote repository
  - ✓ Apply git commands related to repository
    - Git clone
    - Git remote

Resources required for the learning outcome	
Equipment	• Computer • projector • White board
Materials	• Internet • Electricity • Flipchart • Marker pen
Tools	Git, GitHub, Text editor(vs code), Terminal (CMD, Gitbash)
Facilitation techniques	• Demonstration • individual and group work • practical exercise • group discussion • Brainstorming
Formative assessment methods	• Written assessment • Performance assessment

Learning outcome 2: Manipulate files	Learning hours: 20hours
Indicative content	

- **Definition of general key terms**
  - ✓ Status
  - ✓ Branch
  - ✓ commit

- **Add file change to git staging area**
  - ✓ Operation on git status command
    - View new untracked file
    - View modified file
    - View deleted file
  - ✓ Operation on git add command
    - Stage all files
    - Stage a file
    - Stage folder
  - ✓ Operation on git reset command
    - Unstage a file
    - Deleting and staging file/folder
  - ✓ Operation on rm command
    - Remove and stage a file
    - Remove and stage a folder
- **Commit File changes to git local repository**
  - ✓ Best practice of creating a commit message
  - ✓ Operation on git commit command
    - Commit a file
    - Edit commit message
  - ✓ Operation on git log command
    - To see simplified list of commit
    - To see a list of commits with more detail
- **Manage branches**
  - ✓ Operations on branches
    - Create branch
    - List branch
    - Delete local and remote branch
    - Switch branch
    - Rename branch

Resources required for the indicative content	
Equipment	• Computer • Projector • White board
Materials	• Internet, Electricity • Flipchart • Marker pen
Tools	Git, GitHub, Text editor(vs code),Terminal (CMD,Gitbash).
Facilitation techniques	• Demonstration • individual and group work • practical exercise • individualized • trainer guided • group discussion • Brainstorming
Formative assessment methods	• Written assessment • Performance assessment • Project Based Assessment

Learning outcome 3: Ship codes	Learning hours: 30hours
Indicative content	

• **Definition of general key terms**
  • pull
  • fetch
  • push
  • pull request	

- merge

- **Fetch file from GitHub repository**
  - ✓ Operation on git fetch command
    - Fetch the remote repository
    - Fetch the specific branch
    - Fetch all the branch simultaneously
    - Synchronize the local repository
  - ✓ Operation on git pull
    - Default git pull
    - Git pull remote branch
    - Git force pull
    - Git pull origin master
- **Push files to remote branch**
  - ✓ Tags used on git push command
  - ✓ operation on git push
    - push on origin master
    - git push force
    - git push verbose
    - delete a remote branch
- **Merge branches on remote repository**
  - ✓ operation on git rebase command
  - ✓ create pull request
  - ✓ operation on git merge
    - merge the specified commit to current active branch
    - merge commits into the master branch
    - git merge branch

Resources required for the indicative content	
Equipment	• Computer, • projector • White board
Materials	• Internet • Electricity • Flipchart • Marker pen

Tools	• Git • GitHub • Text editor (vs code) • Terminal (CMD, Gitbash).
Facilitation techniques	• Demonstration • Individual and group work • Practical exercise • group discussion • Brainstorming
Formative assessment methods(CAT)	• Performance assessment • Project based assessment

Integrated/Summative assessment

Integrated Situation

SEZERANO ALPHA Crispin is a Senior Developer of Innovate company Ltd located at Huye District, he assigned a project to 5 developers to design web application that contains different forms such as: login form, Student Registration form, Entertainment form, courses registration form and book registration form, using html language, but due to Covid-19 pandemic developers were not able to work together on the given task and become difficult to control them. Senior developer decided to assign tasks to each developer respectively and remotely. and he recommended them to work individually on a given task.

He told them to create their own repository related to a given task,

As a one of 5 developers you are hired to choose one task from above, work on it and

create Pull Request of your task to be merged on the main branch, use GitHub as version control platform.

Submit Pull Request link to the senior developer.

Tools, material and equipment are provided

This integrated situation is inclusiveness

The time allowed to accomplish this task is 4 hours

Resources:

Tools	• Git • Terminal • Web browser • Text editor (sublime text, notepad, notepad++, vscode) • GitHub
Equipment	• Computer • Network devices
Materials/ Consumables	• Internet • Electricity

Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation		Marks allocation
			Yes	No	
1.**Setup repository** (35%)	Git is properly initiated based on Git commands	Git setup is installed			6
		Git is configured			6
	Repository is properly created based on the project.	GitHub account is created			5
		Remote Repository is created			6
	Remote URL is properly set in accordance with Git commands	Remote URL is generated			5
		Indicator 2. URL is			7

		configured			
2.Manipulate files (30%)	File changes are properly added according to Git commands	File is created			7
		File status is checked			6
		Untracked, modified and deleted files are added to staging area			5
	File changes are properly committed based on added files	file is committed to local repository.			5
	Branches are properly managed based on the project	Branch is created			4
		Branch is switched			3
1.**Ship codes** (35%)	1. Files are properly fetched in accordance with Git instruction	Pull is done			8
	2. Files are properly pushed to remote branch based on committed files	Push is done			8
	3. Branches are properly merged based on pull request created	Pull request is created			9
		Branch are merge			10
Total marks		100			
Percentage Weightage		100%			
Minimum Passing line % (Aggregate): 70%					

References

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