STUDENT – PRODUCT   ASSESSMENT TASK

Task Number	3 of 3	Task Name	Project 2
National unit/s code	ICTNWK428	National unit/s title	Create scripts for networking
National qualification code	ICT40120	National qualification title	Certificate IV in Information Technology
RMIT Program code	C4410	RMIT Course code	COSC7401C

Section A – **Assessment Information**

Assessment duration and/or due date	Week 15. The exact date and time will be made available to you through CANVAS.
Task instructions	

Type of Product (tick which applies)
✓ Project
☐ Report
☐ Portfolio
☐ Case study

Summary and Purpose of Assessment

This is the third assessment of three assessment tasks that you must satisfactorily complete in order to be deemed competent for this unit.

This assessment is designed to test your ability in understanding fundamental principles in Scripting such as:

- Algorithms
- Coding syntax and standards
- Data types and Variables
- Operators and expressions
- User Input
- Selection and repetition
- Debugging and resolving syntax and logic errors
- Technical documentation
- Operating System Tools
- File I/O

Assessment Instructions

What

Task 1a must be completed using the operating system.
Task 1b must be completed using the operating system.
Screenshots must be provided for task 1b.

Task 2a must be completed using the operating system.
Screenshot must be provided for task 2a.

Task 2b must be completed using the operating system.
Screenshots must be provided for task 2b.

Task 3a must be completed in a word document.
Task 3b must be completed using the operating system.
Task 3c must be completed using the operating system.

Task 4 must be completed using the operating system.
Screenshot must be provided for task 4.

Task 5 must be completed using the cloud service.
Screenshot must be provided for task 5.

Where

This assessment can be completed at home and in class. Location, due date and time have been set up for the assessment on CANVAS. You should have been notified through the announcements at least one week prior to the commencement.

How

To achieve a satisfactory result, you must answer all the questions as specified in the student answer sheet in Section B. You should have been provided with a copy of the Student Version of this assessment task within the first week of starting this lab and at least 2 weeks before you need to complete the task. This is made available on CANVAS online.

Overview:

You have recently taken over as the Senior IT Technician of a high school. Your daily tasks include the following:

- Installing hardware components inside computers
- Installing and configuring software in computers
- Creating and managing user accounts in computers for students and teachers
- Connecting and configuring computers on the network
- Troubleshooting software and hardware problems with computers
- Providing technical support for students and teachers

All classes have finished for the year and both students and teachers are currently away on summer holidays.

The principal of the high school has also hired a Junior IT Technician to assist with performing the daily tasks on the IT Systems.

As the Senior IT Technician, you have been required by the Principal to complete the following tasks prior to students and teachers returning back to classes after the summer holidays:

- Updating all IT systems
- Upskilling the Junior IT Technician
- Creating a search utility for files stored on IT systems
- Creating an account management utility for students and teachers
- Creating a backup system to store all files for students and teachers
- Rolling out a pilot application for students

Task 1:

You have enabled automatic updates on all Windows computers in each classroom, so they are running with the latest security patches.

However, after inspecting all the Linux computers in each classroom you have noticed that they are all running with outdated security patches.

a) Create a script called **Linux.sh** that will run the command to update all the Linux computers with the latest security patches.

The script must also maintain a log of the command performing all update operations (**Linux.log**)

b)
Use the command to enable the execute permission of the script. Take screenshot (**Linux.jpg**)

Use the crontab utility to schedule the script to run every minute to automate the installation of updated security patches for all the Linux computers in each classroom. Take screenshot (**Linux2.jpg**)

NOTE: The **full path** of the script must be specified in the crontab utility.

Task 2:

The Junior IT Technician has found it inefficient to look for certain files and content in both Linux and Windows computers. You want to upskill the Junior IT Technician, so you have decided to create a script which incorporates a file search feature in Windows with the expectation they will convert this to Linux. In addition, you will create a script to search for file content in Linux with the expectation they will convert this to Windows.

a)
Create a script (**Windows.ps1**) that will ask the user to input a directory, and a filetype. The script should then display a table of results. Use the syntax below as a starting point:

Get-ChildItem -Path $dir -Filter *$type | Select-Object Name,Directory | Format-Table -AutoSize ***

(**Red** is the command and option(s), **Blue** are the variables for storing the directory and filetype entered by the user, **Green** displays the table and should not be touched, **Brown** is the operator and should not be touched)

Run the script and search for PowerShell files in the computer. Take screenshot (**Windows.jpg**)

The script must adhere to the following:
- Inputs execute properly and display the correct information.
- The code contains appropriate indentations
- At least 1 comment included in the code to explain what is happening

b)
Create a script (**searchdata.sh**) that will do the following:
- Prompt the user to enter the name of a **file**
- If **file** exists, prompt the user to enter **text** to search for inside the **file**
    - Insert data from **file** matching the **text** into a new file called **pattern.txt**
- If **file** doesn't exist, display '**File not found**' message on the terminal.
- The following command must be used to search text inside the file:
    - *grep -i text file*
- (**Red** is the command and option(s), **Blue** are the variables for storing the text and file entered by the user, **Green** is the file that stores the data from the text file(s) that matched the text entered by the user)

The **Footballers.txt** and **Teams.txt** text files have been provided for you to use for searching text inside them using the script.

Run the script and search for data inside the **Footballers.txt** text file. Take screenshot (**searchdata.jpg**)

Run the script and search for data inside the **Teams.txt** text file. Take screenshot (**searchdata2.jpg**)

The script must adhere to the following:
- Inputs execute properly and display the correct information.
- The code contains appropriate indentations

- At least 1 comment included in the code to explain what is happening

Task 3:

A select number of students at the high school have been asked to undertake their maths class using Linux and another group of select students will use Windows to determine the best system to use moving forward. You have been asked to create a simple calculator program for both Linux and Windows to assist the students to complete their studies.

a) Create a plan using algorithm for explaining how the calculator program will function.

In your word document you must include the following:
- Completed algorithm plan

b)
Now you are ready to begin developing your calculator program for Linux based on the algorithm in task **3a**

Create a script called **maths.sh**

The script must adhere to the following:
- Code containing the shell identifier
- Writing the code using the scripting language in Linux
- Selection constructs with operators to validate the input entered by the user
- Iteration construct for continuously running the program until the exit option is selected by the user
- Correct syntax for the code as specified in the technical documentation of the scripting language
- The code contains appropriate indentations
- 3 comments included in the code to explain what is happening
- Code is executed in a sequential order from top to bottom
- Variable for storing the arithmetic operation selected by the user
- Variable for storing the two numbers entered by the user
- Use debugging techniques to detect and correct errors with the code for variables, selection and iteration

c)
Now you are ready to begin developing your calculator program for Windows based on the algorithm in task **3a**

Create a script called **maths.ps1**

The script must adhere to the following:
- Writing the code using the scripting language in Windows
- Selection constructs with operators to validate the input entered by the user
- Iteration construct for continuously running the program until the exit option is selected by the user
- Correct syntax for the code as specified in the technical documentation of the scripting language
- The code contains appropriate indentations
- 3 comments included in the code to explain what is happening
- Code is executed in a sequential order from top to bottom
- Variable for storing the arithmetic operation selected by the user
- Variable for storing the two numbers entered by the user
- Use debugging techniques to detect and correct errors with the code for variables, selection and iteration

Task 4:

The Junior IT Technician has written a script (**createaccount.sh**) to automate the following:
- Creation of user accounts for students and teachers
- Assignment of user accounts into groups

Multiple error messages are displayed after executing the script and there are no user accounts created nor any user accounts assigned into groups.

The Junior IT Technician has requested your assistance with troubleshooting the script.

Inspect the code inside the script for any logic and syntax errors.

Write comments inside the script that include the following:
- Name of person who inspected the code
- Date when the person inspected the code
- Total number of errors found with the code
- The category of each error found with the code
- Description of each error found with the code
- Solution for fixing each error found with the code

Fix the error(s) found with the code so the script works correctly.

Save the script as **createaccountV2.sh** after writing the comments and fixing the code.

Run the script to verify a user account is created and assigned to a group. Take screenshot (**createaccountV2.jpg**)

Task 5:

The principal and all teachers have unanimously agreed on the proposal to deliver a combination of face-to-face and remote learning classes to students moving forward.

You are required to implement an online storage system for students to upload the assessments for all of their classes to be graded by the teachers.

Create a repository online using a cloud service to store all versions of algorithms and scripts. Take screenshot (**cloud.jpg**)

Create a shared link for downloading the files from the cloud service.

Make the shared link accessible to the instructor.

Task 6:

Organise a meeting to demonstrate your work to the client (Teacher). This meeting will take place face to face. You will need to register a time on Canvas to see your client (Teacher).

This meeting will serve as an opportunity to assess your completed scripts using the checklist provided in Section B.

If your scripts meet the user requirements, the client (Teacher) will sign off your work on Canvas. If further modifications are required, additional meeting(s) will be required until the scripts meet the user requirements.

Additional Instructions:
- Attempt ALL the questions/tasks in this Assignment.
- Performance requirement:
  - **Satisfactory (S) performance**- met the minimum requirement of all the questions /tasks listed for the Assignment Task.
  - **Not Yet Satisfactory (NYS) performance** - did not meet the minimum requirement of all the questions /tasks listed for the Assignment Task.
- You need to achieve satisfactory (S) results in all three (3) assessments to be deemed Competent (CA)

Conditions for assessment

- You must complete the task within the maximum allowed duration as directed by the assessor.
- This is an individual assessment task. You will be assessed individually against all assessment criteria.
- You can make arrangements with the assessor at least one week prior to the assessment due date if you feel you require special allowance or allowable adjustment to this task.

- Students found in breach of assessment conditions can be charged with academic misconduct, have their results cancelled, be excluded from the program and receive other penalties. Penalties can also apply if a student's test material is copied by others.

- Plagiarism is the presentation of the work, idea or creation of another person as though it is one's own. It is a form of cheating and is a very serious academic offence that may lead to expulsion from the University. Plagiarised material can be drawn from, and presented in, written, graphic and visual form, including electronic data, and oral presentations. Plagiarism occurs when the origin of the material used is not appropriately cited.

- RMIT special consideration is to enable students to maintain your academic progress despite adverse circumstances. The process for special consideration can be found at http://www1.rmit.edu.au/students/specialconsideration

- Students with a disability or long-term medical or mental health condition can apply for adjustments to their study and assessment conditions (Reasonable Adjustments and Equitable Assessment Arrangements) by registering with the Equitable Learning Services (ELS) at https://www.rmit.edu.au/students/support-and-facilities/student-support/equitable-learning-services
  If student has already registered with ELS and his/her study plan is approved, student should inform the teacher if this assessment task is not adjusted in line with approved study plan.

- Please ensure your full and correct name is written on the student version of this assessment task (do not use nicknames or abbreviations).

- You will be assessed as satisfactory or not yet satisfactory.

- You can appeal the assessment decision according to the RMIT Assessment Appeal Processes.

- You will have the opportunity to resubmit any tools that are deemed unsatisfactory (one resubmission allowed per unit, so that means students have two opportunities to submit).

Instructions on submitting your Product Assessment

You must submit the shared link of the cloud service providing access to the zip file containing the following:
- Word document for task 3a.
- Naming convention of the word document is:
  - **<Student Number>_<Student Full Name>_Project_2_Algorithm.doc**
- Windows Scripting files (**.ps1**) for tasks 2a and 3c:
  - **maths.ps1**
  - **Windows.ps1**
  - Use comments (**#**) at the top of the code inside each file that contains:
    - Student Number
    - Student Full Name
- Linux Scripting files (**.sh**) for tasks 1a, 2b, 3b and 4:
  - **createaccountV2.sh**
  - **Linux.sh**
  - **maths.sh**
  - **searchdata.sh**
  - Use comments (**#**) at the top of the code inside each file that contains:
    - Student Number
    - Student Full Name
- Log file (**.log**) for task 1a:
  - **Linux.log**
- Screenshots (**.jpg**) for tasks 1b, 2a, 2b, 4 and 5:
  - **cloud.jpg**
  - **createaccountV2.jpg**
  - **Linux.jpg**
  - **Linux2.jpg**
  - **searchdata.jpg**
  - **searchdata2.jpg**
  - **Windows.jpg**
- The naming convention of the zip file is: **<Student Number>_<Student Full Name>_Project_2.zip**

Equipment/resources students must supply (if applicable):	Equipment/resources to be provided by RMIT or the workplace (if applicable):

| • External hard drive to store electronic files
• Pens
• Notebook
• Laptop (optional) | • Onsite computers with internet connectivity and VirtualBox application
• Canvas access |

Section B – **Marking Guide**

| TASK:
Describe the product to be assessed | You need to follow the Assessment Instructions for Tasks 1, 2, 3, 4, 5 and 6 and submit all the required answers. You must complete ALL the listed criteria satisfactorily to successfully complete this assessment. |

Criteria for Assessment	Satisfactory		Marking Guide *Minimum requirements to be met:*
	Y	**N**	
Task 1 Student has created a script that updated all Linux computers with the latest security patches. The script maintains a log of all update operations performed in Linux computers. The execute permission of the script has been enabled. The script has been scheduled with the crontab utility to enable automatic updates on all Linux computers.	☐	☐	
Task 2a Student created a script that searched for files inside directories and adhered to the following: • Inputs execute properly and display the correct information. • The code contains appropriate indentations • At least 1 comment included in the code to explain what is happening	☐	☐	
Task 2b Student created a script that searched for content inside files and adhered to the following: • Inputs execute properly and display the correct information. • The code contains appropriate indentations	☐	☐	

• At least 1 comment included in the code to explain what is happening			
Task 3a Student has created a plan using algorithm to explain how the calculator program will function.	☐	☐	
Task 3b Student developed a calculator program in Linux that adhered to the following: a) Selection constructs with operators to validate the input entered by the user b) Iteration construct for continuously running the program until the exit option is selected by the user c) Correct syntax for the code as specified in the technical documentation of the scripting language d) 3 comments included in the code to explain what is happening e) Code is executed in a sequential order from top to bottom f) Variable for storing the menu option selected by the user g) Variables for storing the two numbers entered by the user Student used debugging techniques to resolve errors with the code for variables, selection and iteration.	☐	☐	
Task 3c Student developed a calculator program in Windows that adhered to the following: a) Selection constructs with operators to validate the input entered by the user b) Iteration construct for continuously running the program until the exit option is selected by the user c) Correct syntax for the code as specified in the technical documentation of the scripting language d) 3 comments included in the code to explain what is happening e) Code is executed in a sequential order from top to bottom f) Variable for storing the menu option selected by the user g) Variables for storing the two numbers entered by the user	☐	☐	

Student used debugging techniques to resolve errors with the code for variables, selection and iteration.			
Task 4 Student has written comments inside the script that include the following: • Name of person who inspected the code • Date when the person inspected the code • Total number of errors found with the code • The category of each error found with the code • Description of each error found with the code • Solution for fixing each error found with the code Student has fixed the error(s) with the code and the script now works correctly.	☐	☐	
Task 5 Student has created a repository in the cloud service and uploaded all versions of their algorithms and scripts. Student has taken a screenshot of their repository in the cloud service containing all versions of their algorithms and scripts.	☐	☐	
Task 6 The student presented the completed scripts to the client (Teacher) to be signed off on the assessment document.	☐	☐	

Section C – **Feedback to Student**

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Has the student successfully completed the task?	Yes	No

Feedback to student:

Assessor Name	Date