South East Technological University

FACULTY OF LIFELONG LEARNING

ASSIGNMENT

Ollscoil Teicneolaíochta an Oirdheiscirt

South East Technological University

Higher Diploma in Computing KRSIT_H

Module Title	Architecture, Operating systems, and networking
Assignment Number	Batch Scripting
Assignment Type	APIs and automation
Weighting	**10%**
Submission Date	22/04/2024

Continuous Assessment Submission Guidelines

Assignments must be submitted via Turnitin. If assignments are not submitted via Turnitin, this will be regarded as a non-submission.

Please observe the suggested word count. Assignments that are too short or too long may be penalised.

Artificial Intelligence

As part of the assessment strategy, students may be called upon, at random, to orally defend any piece of work submitted. This would be conducted, not as a punitive measure, but rather as a way of positively supporting the overall assessment process and ensure that it is robust. Work submitted through TurnitIn will produce an AI report as well as a Similarity report. Assignments which have copied work from websites, from other authors, from other students or any other sources will receive a grade of 0.

Extension Policy

Only in exceptional circumstances will extensions be granted.

Undergraduate and postgraduate extensions cannot be granted by your lecturer. Such extensions can only be granted by the Faculty of Lifelong Learning once a completed extension form and supporting documentation is returned online.

Students can apply for extensions at:

https://www.itcarlow.ie/study/lifelong-learning/lll-forms/extension-request-form.htm

Extensions must be sought in advance of the submission date. Extensions will not be granted retrospectively.

The circumstances under which an extension request will be considered include, but are not limited to:

- Serious personal/family/business reasons
- Where a student is representing their country or university

An extension request is **unlikely** to be considered under the following circumstances:

- Minor illnesses such as a common cold
- Holidays during the academic year
- Multiple assignments due at the one time
- Failure to plan study schedule
- Debs/weddings/social events
- IT and/or computer failure

The Faculty of Lifelong Learning reserve the right to request supporting documentation. If you are applying for an extension that exceeds **5 days** you must submit supporting documentation (e.g. letter from a doctor, employer, line manager etc.) so that any prolonged absence can be verified.

Please note that loss of/damage to a USB stick is not considered a valid reason for an extension. To avoid any unnecessary distress, please ensure that you **back up your work** regularly as you undertake your assignment. By registering with free online storage services such as Dropbox or Skydrive you can save your work online and access it at any computer. Alternatively use an external hard drive/or just email it to yourself.

Failure to submit a piece of assessment may result in a grade of 0.

Plagiarism Policy

Assignments which have copied work from websites, from other authors, from other students or any other sources will receive a grade of 0. All instances of plagiarism must be reported to the Head of Department who, in turn, is obliged to report them to the Registrar. Students who receive this grade may be asked to justify their actions to the University's plagiarism panel. Students must apply to the examination board at the end of the academic year to re-submit their work in such instances. Please note that copying verbatim from original sources is unacceptable even if you provide references.

Referencing

Please consult 'Credit Where Credit is Due' for the referencing system used by SETU. Please ensure accuracy and consistency in your referencing. The following are the most common reference types that you will need when compiling the reference list at the end of your assignments.

Journal articles:

For example:
Seebohm, P., Gilchrist, A. and Morris, D. (2012) Bold but Balanced: How Community Development Contributes to Mental Health and Inclusion. *Community Development Journal*, 47 (4), pp. 473-490.

Books
For example:
Banks, S. (2012) *Ethics and Values in Social Work*. (4th Ed.) Basingstoke: Palgrave Macmillan.

Book Chapter
If a book is an edited collection with different contributors for each chapter, cite the author of the specific chapter you have used in your work. If you use more than one chapter, cite each author separately. Include the page numbers of the chapter in the bibliography.

For example:
Forde, C. (2009) The Politics of Community Development: Relationship with the State. In: Forde, C., Kiely, E. and Meade, R., eds. *Youth and Community in Ireland: Critical Perspectives*, Dublin: Gill and Macmillan, pp. 49-68.

Webpage

Unless the webpage has a specified individual author, you can treat the organisation as the author. If the year the webpage was created is available, you can give this. If not, simply state 'no date available'. You must also include the date which you last accessed the webpage in brackets at the end of the reference.

For example:

Children's Rights Alliance, (no date available) *What Are Children's Rights?* Available: http://www.childrensright-s.ie/childrens-rights-ireland/childrens-rights-ireland [accessed 01 September 2013].

To avoid common referencing mistakes, please note the following:

- In the reference list, place the title of the journal, not the specific journal article, in italics.
- In the reference list, give a full reference for a webpage not just the url.
- When referencing books in the reference list, the place of publication (e.g. Dublin) precedes the name of the publisher (e.g. Gill and Macmillan).
- There is no need to bullet point or number your reference list.
- When citing websites within the main body of your assignment, use the (author, date) formulation rather than the url; i.e. write (Children's Rights Alliance, no date available) rather than inserting the web address.

When quoting directly from an original source within the main body of your assignment, give the page number(s). Try to avoid excessive use of direct quotation.

MODULE AIM
To familiarise the student with knowledge of computer architectures, networking concepts and contemporary operating system.

LEARNING OUTCOMES
On successful completion of this module the learner should be able to:
1. Appraise the basic architecture and operation (processing, storage and communication) of a computer system.
2. Demonstrate skills in the operation and management of contemporary operating systems
3. Demonstrate skills in building and troubleshooting simple computer networks

MODULE ASSESSMENT

Assessment Component	**Details**	**Learning Outcomes addressed**	**% of total**
Practical/Skills Evaluation	**Weekly practical/laboratory work designed to allow students to demonstrate the achievement of the learning outcomes**	**1,2,3**	24.00
Practical/Skills Evaluation	**MC online questionnaires**	**1,2,3**	16.00
Assignment	Design & development of a	**1,2**	10.00

	batch that capture a daily snapshot of a folder		
Open Book exam		**1, 2,3**	50.00

The Assignment Brief details

Module:	Architecture, Operating Systems and Networking			
Nature of Assignment:	Coding –Batch Scripting			
Assignment Weighting:	10% of overall module marks			
Circulation Date:	18/03/24	**Submission Date:**	22/04/24	
Feedback - Dates and Nature:	**Feedback** After submission, initial feedback will be provided before the beginning 29th April 2023. This will be provided in the form of a written review			
Aim of Assignment:	The aim of this assignment is to assess your knowledge of OS management, particularly using batch / bash or any other shell scripting for automated system tasks such as Logging and Backup.			
Alignment with Module Learning Outcomes:	The assignment aligns (fully or partially) to the following module learning outcomes: 1. Appraise the basic architecture and operation (processing, storage, and communication) of a micro-processor-based system 2. Identify the characteristic requirements and features of typical operating systems.			
Description (include link to additional detailed brief if required, e.g. case study, drawings, etc.):	Create batch scripts (or for Mac and Linux users the shell equivalent). A file for backing up a directory and logging the changes. You will need to do your own research online for commands not mentioned in class, in particular, you may need to investigate: - Loop control (for) - How to check for file and directories existence - Date manipulation - File comparison			
Assignment:	Include a comment at the top of each script with your name and student ID. Create a folder called assignment. You can create a single script or multiple scripts to achieve the objective, but the main script should be called “backup.bat” if using batch, and backup.sh if using bash, tcsh, dash, or other shells.			

All the scripts need to be located Inside the assignment.

The main script is supposed to be launched from the current directory (i.e. ./backup.sh).

In the description of the algorithm below, we enclose between '<' and'>' variable parts, i/e.:

- <date>: here we expect the date as provided by the OS to the script, for this date no particular formatting is expected.
- <time>: here we expect the time as provided by the OS to the script, for this time no particular formatting is expected.
- <YYYYMMDD>: name of the output folder for the snapshot as generated by the script.
- <absolute path>: absolute current path for the local folder.

An example of log, and filesystem containing all the above, is illustrated below the algorithm instructions

Before running the script, you will create folder, named input, having at least four files in it.

When backup script runs

1. As soon as the script starts appends the following line to the backup.log file present in the current directory, creating it if it does not exist:
    a. <date> <time> Script started.
    b. <date> <time> working dir <absolute path of the current directory> where the absolute path is determined by the script.
2. Now the script creates a new folder called YYYYMMDD (where YYYY is the current year, MM the current month, and DD the current date, ex 20243001 for 30/01/2024) in the same directory **IF AND ONLY IF** this folder does not already exist.
    a. The folder name is not hard-coded (in other words the script should fetch the current date from the system and create the folder with the current date as name).
    b. **IF** the output folder has been created (i.e. did not exist already):
        i. The script appends to the backup.log file the following line:
            1. <date> <time> created folder <YYYYMMDD>
    c. **OTHERWISE** (i.e. the folder existed when the script was launched):
        i. The script appends to the backup.log file the following line:
            1. <date> <time> using previously created folder <YYYYMMDD>
3. Copy the files from the input folder to the new folder only if they are not already there.
    a. In this case the script appends to the backup.log file the

following line:

i. 1 <date> <time> Added file <filename> to folder <YYYYMMDD>

4. If a file is already present in <YYYYMMDD> then:
    a. Compare files
        i. **IF THE FILES ARE THE SAME**
            1. The script just appends the following line to the backup.log file:
                a. <date> <time> <filename> ignored (already in <YYYYMMDD>
        ii. **IF THEY ARE DIFFERENT**
            1. The script overwrites the file in the destination folder and writes on the log:
                a. <date><time> <filename> changed... overwritten in <YYYYMMDD>
5. The script adds the following line to the backup.log file:
    a. <date> <time> Job done.
6. The script terminates.

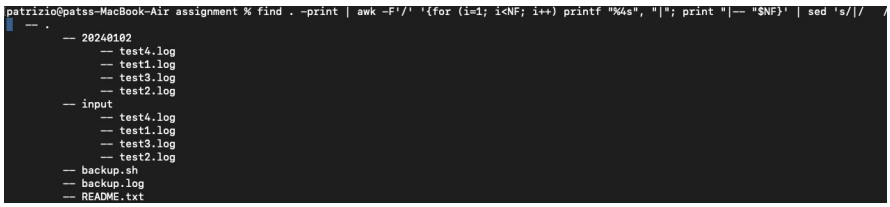
Example of backup.log:

```
2024-01-02 18:54:08 script started
2024-01-02 18:54:08 working dir /Users/patrizio/Documents/assignment
2024-01-02 18:54:08 created folder 20240102
2024-01-02 18:54:08 added test1.log to 20240102
2024-01-02 18:54:08 added test2.log to 20240102
2024-01-02 18:54:08 added test3.log to 20240102
2024-01-02 18:54:08 End Of job
2024-01-02 18:54:28 script started
2024-01-02 18:55:05 working dir /Users/patrizio/Documents/assignment
2024-01-02 18:54:28 using previously created folder 20240102
2024-01-02 18:54:28 test1.log ignored (already in 20240102)
2024-01-02 18:54:28 test2.log ignored (already in 20240102)
2024-01-02 18:54:28 test3.log ignored (already in 20240102)
2024-01-02 18:54:28 added test4.log to 20240102
2024-01-02 18:54:28 End Of job
2024-01-02 18:55:05 script started
2024-01-02 18:55:05 working dir /Users/patrizio/Documents/assignment
2024-01-02 18:55:05 using previously created folder 20240102
2024-01-02 18:55:05 test1.log changed... overwritten in 20240102
2024-01-02 18:55:05 test2.log ignored (already in 20240102)
2024-01-02 18:55:05 test3.log ignored (already in 20240102)
2024-01-02 18:55:06 test4.log ignored (already in 20240102)
2024-01-02 18:55:06 End Of job
```

Create a README.txt that

7. gives instructions on how to run the script
8. explains the purpose of the script.
9. Includes instructions on how you can automate the script to run automatically when the PC is turned on.
10. *Comment each line in your script on what its purpose is.*

Use echo statements to test the flow of your scripts, you can leave the echo

	statements in at the end. Example of assignment folder: 	
Notional engagement hours:	It is anticipated that you spend approximately '12' hours coding and researching for this assignment. The assessment criteria/rubric presented below sets out in detail what successful engagement involves and you should read through this carefully as you complete your assignment and evaluate your progress against the various criteria. In particular, you should focus on including all the basic elements first and on having clear comments and then adding more elements.	

Detailed Grade Descriptors for the assignment

Maximum points awarded for every answer (evaluated in accordance with the generic descriptors described in Appendix 2).

- **Point 1** in the script: **6%** divided as follows:
  - 2% for preparing a log string and either appending it to the log file if it exists or to create a new file and adding the log string to the file.
  - 2% for formatting the log strings with date and time.
  - 2% for determining the right local folder and adding it to the log file.
- **Point 2** in the script: **24%** divided as follows:
  - Creating the folder for processing if it does not exist: 10%.
  - The created folder has a dynamically formatted name, where the script intelligently determine the precise day of the year for you: 5%
  - The folder name is denoted as <YYYYMMDD>: 5%.
  - Write the right log lines depending on whether the folder was created or existed already: 4%
- **Point 3** in the script: **15%** divided as follows:
  - Check whether the files exist in the destination folder before copying them: 10%.
  - Copy the files in the destination folder: 3%
  - Add the relevant log line to the folder: 2%
- **Point 4** in the script: **19%** divided as follows:
  - Compare files that exist in both folders and only copy if they differ: 15%
  - Write the right lines of log as requested: 4%
- **Point 5,6** Write the log line and terminate the script**: 4%**
- **Point 7** Write instructions on how to run the script: **5%**
- **Point 8** Describe the purpose of the script: **5%**
- **Point 9** Describe how can the script be automated to run when PC is turned on: **7%**
- **Point 10** Comment every line of code: **15%**

Note: While the correctness of the formatting, including date and time, will be assessed only once for the scores assigned to the log lines, the consistency will be evaluated for each log entry. In other words, the format of the code lines must remain consistent across various log entries.

Appendix 1: Generic Grade Descriptors for Individual Modules (related to Bloom's levels of learning development)[2]

Grade	Criteria relevant to assessing Knowledge, Understanding, Application (Bloom's levels 1–3)	Additional criteria relevant to assessing Analysis, Synthesis, Evaluation (Bloom's levels 4-6)
70 – 100 **1.1**	**Excellent** A comprehensive, highly structured, focused and concise response to the assessment task, consistently demonstrating: ▪ An extensive and detailed knowledge of the subject matter. ▪ A highly developed ability to apply this knowledge to the set task. ▪ Evidence of extensive background reading. ▪ Clear, fluent, stimulating and original expression. ▪ Excellent presentation (spelling, grammar, graphical) with minimal or no presentation errors.	A deep and systematic engagement with the assessment task, with consistently impressive demonstration of a comprehensive mastery of the subject matter, reflecting: ▪ A deep and broad knowledge and critical insight as well as extensive reading. ▪ A critical and comprehensive appreciation of the relevant literature or theoretical, technical or professional framework. ▪ An exceptional ability to organise, analyse and present arguments fluently and lucidly with a high level of critical analysis, amply supported by evidence, citation or quotation. ▪ A highly developed capacity for original, creative and logical thinking.
60 – 69 **2.1**	**Very Good** A thorough and well-organised response to the assessment task, demonstrating: ▪ A broad knowledge of the module matter. ▪ Considerable strength in applying that knowledge to the task set. ▪ Evidence of substantial background reading. ▪ Clear and fluent expression. ▪ Quality presentation with few presentation errors.	A substantial engagement with the assessment task, demonstrating: ▪ A thorough familiarity with the relevant literature or theoretical, technical or professional framework. ▪ Well-developed capacity to analyse issues, organise material, present arguments clearly and cogently well supported by evidence, citation or quotation. ▪ Some original insights and capacity for creative and logical thinking.
50 – 59 **2.2**	**Good** An adequate and competent response to the assessment task, demonstrating: ▪ Adequate but not complete knowledge of the module matter. ▪ Omission of some important module matter or the appearance of several minor errors. ▪ Capacity to apply knowledge appropriately to the task albeit with some errors. ▪ Evidence of some background reading. ▪ Clear expression with few areas of confusion.	An intellectually competent and factually sound answer with, marked by: ▪ Evidence of a reasonable familiarity with the relevant literature or theoretical, technical or professional framework. ▪ Good well-developed arguments, but more statements of ideas. ▪ Arguments or statements adequately but not well supported by evidence, citation or quotation. ▪ Some critical awareness and analytical qualities.

[2] Anderson, L. W. and David R. Krathwohl, D. R., et al (Eds.) (2001) *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. Allyn & Bacon. Boston, MA

	▪ Writing of sufficient quality to convey meaning but some lack of fluency and command of suitable vocabulary. ▪ Good presentation with some presentation errors.	▪ Some evidence of capacity for original and logical thinking.
Grade	**Criteria relevant to assessing Knowledge, Understanding, Application** (Bloom's levels 0 – 3)	**Additional criteria relevant to assessing Analysis, Synthesis, Evaluation** (Bloom's levels 4 - 6)
40 – 49 **Pass**	**Satisfactory** An acceptable response to the assessment task with: ▪ Basic grasp of module matter, but somewhat lacking in focus and structure. ▪ Main points covered but insufficient in detail. ▪ Some effort to apply knowledge to the task but only a basic capacity or understanding displayed. ▪ Little or no evidence of background reading. ▪ Several minor errors or one or more major error. ▪ Satisfactory presentation with an acceptable level of presentation errors.	An acceptable level of intellectual engagement with the assessment task showing: ▪ Some familiarity with the relevant literature or theoretical, technical or professional framework. ▪ Mostly statements of ideas, with limited development of argument ▪ Limited use of evidence, citation or quotation. ▪ Limited critical awareness displayed. ▪ Limited evidence of capacity for original and logical thinking.
0 – 39 **Fail**	**Unacceptable** A response to the assessment task that is unacceptable, with: ▪ A failure to address the question resulting in a largely irrelevant answer or material of marginal relevance predominating. ▪ A display of some knowledge of material relative to the question posed, but with very serious omissions / errors and/or major inaccuracies included in the answer. ▪ Solutions offered to a very limited portion of the problem set. ▪ An answer unacceptably incomplete (e.g. for lack of time). ▪ A random and undisciplined development of argument, layout or presentation. ▪ Unacceptable standards of presentation, such as grammar, spelling or graphical presentation. ▪ Evidence of substantial plagiarism	An unacceptable level of intellectual engagement with the assessment task, with: ▪ No appreciation of the relevant literature or theoretical, technical or professional framework. ▪ No developed or structured argument. ▪ No use of evidence, citation or quotation. ▪ No analysis or critical awareness displayed or is only partially successful. ▪ No demonstrated capacity for original and logical thinking.