Scripting Languages
Assignment 3

ASSIGNMENT BRIEF

Important points before you begin:

- Read this brief very carefully in full, and at the earliest opportunity
- If any of this brief's stipulations are unclear to you, it is **your** responsibility to seek timely clarification from the lecturer/unit coordinator well before the assessment's due date
- Be aware that if you misinterpret this assignment brief, either in part or in full, this misinterpretation will not be accepted as grounds for an appeal of the result allocated

Overview

In this assignment you will be required to demonstrate a much more sophisticated mastery of shell scripting by adding a set of new features to the *getimgs.sh* script you submitted for your Portfolio 2 assessment. The assignment is comprised of two (2) components, these being:

1. A shell script (30 marks)
2. A video (10 marks)

For a *total* of **40** marks.

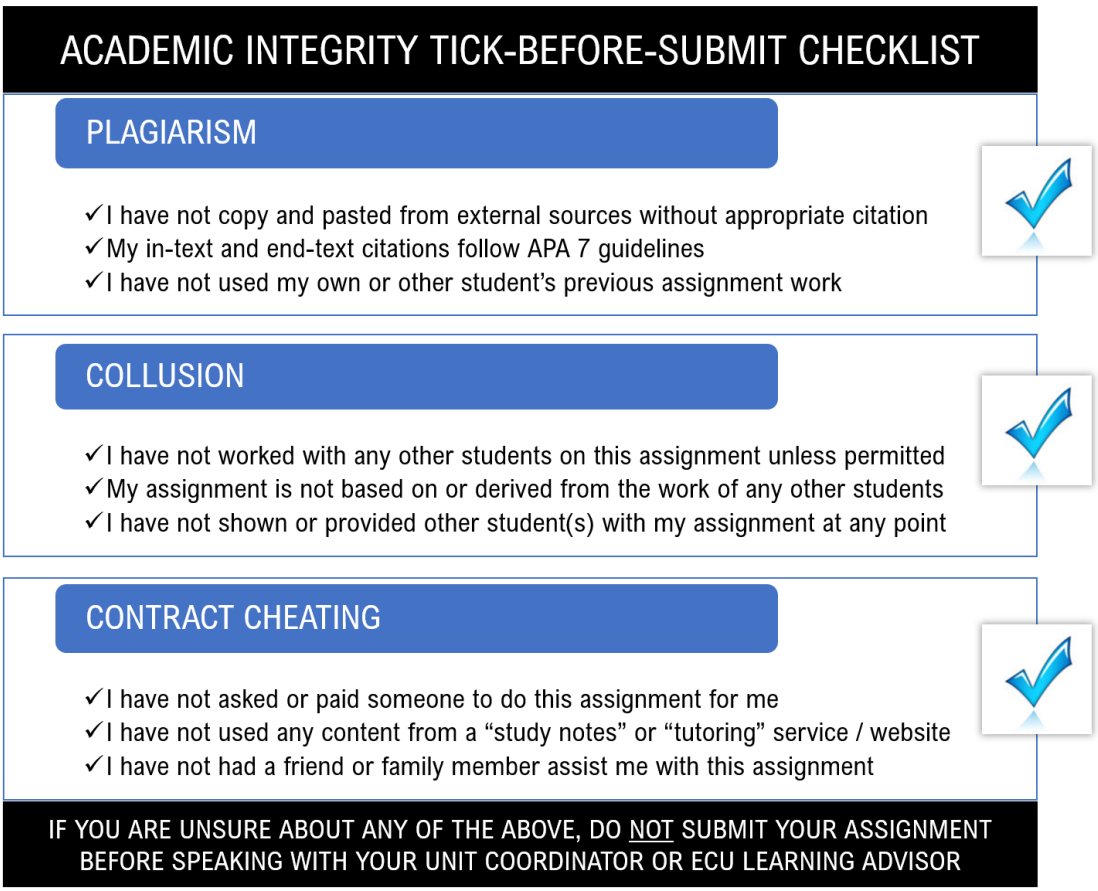
Your Academic Integrity Obligations

Your tutor, lecturer, and unit coordinator all take Academic Integrity very seriously and it cannot be stressed strongly enough how important it is that you fully understand your academic integrity obligations as a student of the University. In regard to all of this unit's assessments, all suspected instances of academic misconduct will be reported for investigation, which may result in substantial academic penalties for those concerned. If you are unfamiliar with the University's Academic Integrity Policy as it applies to all assignments you submit for this unit, you can familiarise yourself with it here. If you are unsure of anything, please contact the Unit Coordinator for clarification before submitting this assessment.

AI Tool Utilisation

Whereas AI tools can serve as a very useful tool in the software engineering workplace, they are not to be used to complete any of the assessments in this unit, either in-part or in totality. This is because the focus of this unit is the development of authentic knowledge of, and skill in applying, various scripting languages to achieve specific outcomes, and not the use of AI tools to act on a programmer's behalf. This acquisition of authentic knowledge extends beyond the outcomes of this unit and is important to a student's future ability to be successful in obtaining a Work Integrated Learning placement, and ultimately, a job in industry. Employers already use AI tools extensively and know what they can and cannot do – they see no value in hiring graduates whose demonstrable skills do not exceed that of existing AI tools. Additionally, students suspected of representing AI output as their own work may be called upon to demonstrate functional knowledge of this work, which, if not forthcoming, may in turn lead to allegations of academic misconduct.

Please read the checklist below and watch the associated video **before** submitting this assignment.



General Assignment Requirements

- Your script **will** be run in the *Azure Linux VM* provided at the beginning of semester. It is **strongly** recommended that your develop and/or test your script in this environment. If you have chosen not to use this environment, it is still **your** full responsibility to ensure your script functions as stipulated in this brief within the *Azure Linux VM* provided before you submit it for assessment. If the script you submit is incompatible with this environment, either in part or in full, a substantial loss of marks will be the likely result, which includes a possible zero (0) result.
- Ensure the script you write is *fully self-contained* and is not configured to be dependent on external files, libraries or resources to run. Non-observance of this requirement may cause your script to run incorrectly or not at all in the assessor's environment, with substantial loss of marks, or even no marks, often being the outcome.
- Carefully check your submission before uploading it to Canvas. **What you submit is what gets assessed!** If you make a submission error, e.g. submit a wrong file, an empty .zip archive etc, no further/subsequent submissions will be accepted, which may result in a substantial loss of marks, or even a zero (0) result in some cases.
- You must only submit a **single** shell script (.sh) file named *getimgspro.sh* contained within a .zip file with the stipulated name in any *individual upload action*. Do **not** upload multiple files/zip archives in the same upload action as all will be considered invalid and will not be assessed. Also note that only the most recent individual submission made (as determined by the timestamp Canvas allocates) will be assessed.

Task – Get Images Pro (30 marks)

Using ***only*** the commands, utilities and programmatic techniques addressed in lecture slides 1-8 inclusive, develop an enhanced version of your *getimgs.sh* script named ***getimgspro.sh***.

Required Script Functionality

- Your *getimgspro.sh* script is to retain all of the specified functionality of the original *getimgs.sh* script you submitted as your Portfolio 2 assessment, **plus** the following five (5) additional new features:

  ADDITONAL OPTIONS:

  1. An *optional* **-a** option (flag) that, if used, will download all supported image files (.jpg, .jpeg, .png, .gif) found in a nominated web page (URI)
  2. An optional -**d** option (flag) that, if used, will list all folders in the current working directory that contain downloaded image files and prompt the user to:
     a. Choose to have any individual folder in the list deleted, or
     b. Choose to have all folders in the list deleted

  *Important: When the **-d** option is used, the default functionality of the script, i.e. to scan for and download image files from a given URL, is not to be executed. Only the delete functionality is to be presented to the user. This means that the **-d** option is not to be used in conjunction with the **-z** and **-a** options. If these latter options are used with the **-d** option, the script is to immediately terminate, and an appropriate corrective message provided to the user.*

  ADDITIONS TO THE DOWNLOADED IMAGES SUMMARY:

  3. The summary of downloaded image files printed to the terminal is to be *sorted by* **file size** from highest to lowest
  4. Also as part of the summary, the total size of **all** image files downloaded is to be prominently displayed
  5. To ensure precise alignment of the summary, the width of the summary's file name column is to be **dynamic** so that it is always five (5) characters wider than longest file name it displays

Other Compulsory Requirements

- It is solely your responsibility to figure out how to implement the above-stipulated additional features correctly, and precisely as described in your *getimgspro.sh* script - no example screenshots have been provided on this occasion.
- Your full name and student number **must** be placed at the top of your script (as comments) immediately after the *shebang* line.
- To construct your script, use any combination of commands, utilities and programmatic techniques addressed in the unit's lecture slides (*Modules 1-8* inclusive). *Do **not** use commands, utilities or programmatic techniques not addressed in the unit's lecture slides (Modules 1-8 inclusive).*

- Any temporary files your script creates in the course of its execution **must** be removed upon the script's termination. This, of course, does **not** include the downloaded image files, the directory in to which they were downloaded, or the zip archive created if the *-z* option is used, *unless the user specifically uses the delete option to do so*.
- Your script **must** contain accurate and helpful 'in-situ' comments that explain **all** of the code elements it contains. *Be aware – comments that are not accurate and helpful in regard to the code they describe, or a complete lack of comments, will not only cost marks, but may also be interpreted as suggestive of possible academic misconduct*. Please note that this script does **not** need to be accompanied by a *description* as was required for Portfolios 1 and 2. This is because your presentation video will, in part, provide this description.
- The efficiency and correctness with which the commands, utilities and programmatic techniques within your script have been utilised will form also form part of your mark, so please pay close attention to this aspect of your code as well. For example, your *getimgspro.sh* script is expected to, at a minimum, make use of genuinely useful functions, the getopts command (correctly applied), piping, command substitution, array(s), redirection and appropriate use of the grep, sed and awk utilities where applicable, etc.
- Marks will also be deducted if the number of lines-of-code in your script *significantly* exceeds that your assessor deems were necessary to achieve the stipulated outcomes. The most common reasons for excessive lines-of code include, but are not limited to, poor command selection, non-use of functions for repetitive tasks, and limited use of piping and command substitution.

Test URLs

To develop and test your script, you can re-use the URLs you gathered for Portfolio 2. However, the more URLs you test your script with, the more confident you can be that it is functioning as required.

Important Note: *If your script does not run for **any** reason, e.g. hard-coding of files/directories/paths, use of a development environment not compatible with the Azure Linux VM provided at the beginning of semester, only a partial mark selected from the rubric's right-most (Unsatisfactory) column in each section will be awarded on a code-readthrough basis (at the assessor's discretion). Your assessor will **not** fix non-functional, dysfunctional or incompatible scripts.*

Assessment Rubric

On Canvas.

How to submit your Assignment 3 script to Canvas

Submit a **single** shell script (.sh) file named *getimgspro.sh* contained within a **.zip** file to Canvas with the following naming format (use *your* surname/student number):

```
[surname]_[student-ID]_CSI6203_ASS3.zip
```

Do **not** submit any files other than that stipulated above. Further, even though there is no restriction on how many times you make individual submissions (each of which gets its own unique timestamp in Canvas), do **not** upload multiple files/zip archives in the *same upload action* as all will be considered invalid and not be marked.

Get Images Pro – Video (10 marks)

Record a video presentation in which you present and explain the design and development processes you followed to develop your **Get Images Pro** solution in the context of what you learned from the unit's lectures and workshops. This presentation is to take the form of a ten (10) minute Panopto video, which addresses **all** of the following:

An Introduction [<= 1.5 minutes]

- Video begins with you appearing on-screen displaying your Student ID card (or DL/Passport) and verbally stating your full name and student number
- A brief overview of the presentation/demonstration is provided clearly identifying its purpose and a simple agenda of what is to follow

Main Discussion [<= 7 minutes]

- Explain the design and development processes you undertook to develop your Get Images Pro solution, making specific reference to the shell scripting principles, techniques and commands addressed during the unit's lectures and workshops
- Be sure to have your *getimgspro.sh* script up and running so you can demonstrate operationally where and how these principles, techniques and commands have been applied in practice to achieve the stipulated functionality outcomes

A Reflection [<= 1.5 minutes]

- Provide an explanation of the Get Images Pro script's development process that includes what went well, the difficulties encountered and skills and knowledge that have been gained from the process

Overall Presentation Values

- Both the video and audio elements of the presentation are of good quality
- The demonstration is given in a professional manner

Important Note: *The* ***functionality*** *dimension of your script is assessed in the script component of this assignment, not the video component. If your script does not function correctly, or at all, when run by your assessor, the argument that it functioned correctly in your video will not be accepted.*

Assessment Rubric

On Canvas.

How to submit your Assignment 3 video to Canvas

Using the process stipulated, submit your Panopto video through the appropriate section of Canvas on or before the due date specified.

END OF ASSIGNMENT BRIEF