Requirements Document

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1 Assessment Environment

I. The assessment environments should be scriptable.

   i. The lecturer should be able to generate the environment with their own configurations from a script.

   ii. The environment should be runnable with a script.

II. The assessment environment must be highly and easily configurable

   i. There must be an easy to use graphical user interface for configuring the environment.

   ii. There should be an easy to use command line interface for configuring the environment.

   iii. There must be a wide array of configuration options, such as:

      – Different operating systems.
      – Limited memory access.
      – Limited CPU access.
      – Limited network access.
      – Limited access to installed programs.
      – Making certain files or directories accessible.

   iv. Old environment configurations must be easily reproducible for future use.

III. The assessment environment must be secure.

   i. There must be no way for a student to change the configurations of the environment.

   ii. There must be no way for the student to leave the environment during the assessment.

   iii. The student must not be given superuser access in the environment.

   iv. The generation and configuration of the environment must be completely hidden from the student.

   v. There must be a way to ensure that a student has completed their assignment from within the environment.

   vi. There must be a way to track the use time and IP address of the computer that the environment was used on.

IV. The assessment environment must be extremely easy and intuitive to use.

   i. The environment must be easy and intuitive to set up for the students.

   ii. The environment should be simple enough for a normal teaching assistant to be able to provide technical assistance to a student.

iii. Lecturers should not need to do anything to distribute or set up the environment after the configurations have been set up.

iv. Instructions on how to use the environment must be obviously available in the place that the environment is made available to students.

V. Ethical considerations must be taken into account.

i. The environment must not feel or look different to the assessment environments that are currently available to students.

ii. Students must give their informed consent before they are able to use the assessment environment. This must not be able to affect their ability to do well in the assessment.

VI. The assessment environments should be easy to maintain and be supported.

i. The environment should use technology that is easily usable on the NARGA computers.

ii. The environment should be relatively light weight so that it does not take up much space and is easy to distribute.

2 Submission System

I. There must be an easy way for students to submit files.

i. The submissions must be submitted through a web portal. This web portal must be simple, easy to use and it must completely hide the inner working from the student.

ii. The system should be able to allow submissions to be edited by the student.

iii. There must be a clear "submit button" and there should be a clear "edit submission" button. These should be the only actions that a student can take on the system.

iv. There must be clear instructions for what is expected from the name and size of the file that must be submitted.

II. There must be a secure way for submitted files to be stored and viewed by markers.

i. The submitted files must not be visible or available to any person that is not an approved marker for a specific submission.

ii. Approved markers must only have access to the files that they are approved to be marking.

iii. Students will be able to download or view their own file if the lecturer allows it in the submission configuration.

iv. Files will be able to be stored on the web portal server:
    - The files must be stored in a directory that is created specifically for the specific assignment submission.
    - It must be absolutely clear which files were submitted by which students.
    - The file system must not be visible to any user. Markers that are approved on the creation of the submission must only be given access to files submitted for the submission.
    - Approved markers must be able to either view the submitted files in the browser or download them to their own computer.

v. The files may be able to be stored on GitLab:
    - The files should be pushed to the repository that is linked with the student that is submitting.
    - Approved markers should be given read access to only all of the relevant repositories.
    - Links to the relevant repositories should be available to the approved markers in the browser.
    - There may be options for continuous integration.

III. The submission system web portal must be secure.

i. Any person that uses the portal must sign in with the US single sign on system to verify their identity.

ii. Any person that has signed in must only be allowed to view and use the features and directories that they have previously been given permission to interact with.

iii. Lecturers will be allowed to create submissions and then view the contents of the directories associated with these submissions.

iv. Lecturers must give a list of markers that will have access to their created submissions and the contents of the associated directories.

v. Lecturers must also give a list of students that are authorised to submit for each submission.

vi. Students will only be shown submissions that they have been authorised to submit for and nothing else. 0he SU number and level of permission of users will be stored in the session to ensure that there is no unauthorised access to different parts of the portal

IV. There must be an easy and intuitive way for lecturers to create submissions.

i. There must be a form in the web portal that allows the lecturer to select the required configurations for each submission that they create. These configurations will be stored in file format on the server and must be available in the future so that a submission is reproducible.

ii. There must be a command line interface where a lecturer can uses a previously created configuration file to create a new submission.

iii. There must be some required configurations, such as:
   - Dates and times that the submission must be active.
   - A list of all students that are authourised to submit.
   - A list of all approved markers for this submission.

iv. There must be a wide variety of optional configurations available, such as:
   - Allowed file size.
   - Allowed file extensions.
   - Allowed submission name restrictions.
   - Automatic marking.
     - This will require the upload of a marking script and all needed files.
     - There may be options for configurations of the marking environment.
   - Automatic plagiarism checking.
   - Continuous integration options.

v. There must be a marking form created for each submission. This form must be a Google sheet or something similar.

vi. A directory must be created for each submission.
   - The directory must contain sub-directories for each student that is authorised to submit, as well as a sub directory that contains the files required for automated marking.

V. There should be an easy way for markers to view and mark the submissions.

i. The approved markers must have access to only the files associated with the submission that they are approved to mark.

ii. Markers will be given access to the marking sheet that is associated with the submission.

iii. There must be the option for manual marking.

iv. There must be the option for automated marking.
   - The marking script will be run and the logs will be saved on the server and made available to the approved markers.
   - If the marking script can give marks for each student, that must be put in the marking sheet.
   - Markers must interpret the results of the marking script and enter this into the marking sheet.