

## Requirement Analysis for an Assignment Submission System

### Step 1:

For an assignment submission system, there will be a few expected users that can be identified using this system as follows:

- Students
- Teaching Assistants (TA)
- Instructors
- System Admin

### Step 2:

With the users being identified, the activities they will be performing or conducting is then identified:

- Students
  - Submitting Assignments
  - Submitting Comments/message along with the assignments.
  - Uploading files related to the assignments
  - Viewing submission/files
- Teaching Assistants (TA)
  - Grading assignments
  - Providing feedbacks
  - Managing assignments' status and information
  - Managing files
- Instructors
  - Grading assignments
  - Providing feedbacks
  - Managing assignments' status and information
  - Managing files
  - Creating, managing, and deleting assignments
- System Admin
  - Handling file uploads and directory
  - Handling error and debugging

Step 3:

After identifying the activities that will occur on the system, we are then able to identify the data needed by the system, and the constraint on the activity or the resultant state of the system:

- Assignment submission
  - With assignments being submitted by students, a compressed/zip file will be preferred to handle all of the submission.
    - With a compressed file for each individual submission, we will be able to save on storage on the server.
  - A database containing each submission by all students will correlate the correct information to all TAs and instructors, showing who has submitted a submission to the assignment and links to the submission folder.
    - The database will need to be big enough to handle at least multiple submission per student across the assignments they'll be given.
- Submitting Comments/ messages
  - A restraint needed to be added to the comments of the submission to prevent unnecessary junk or unwanted messages.
    - A 250-characters limit will be preferred.
- File Uploads
  - A maximum file size restraint will be needed to prevent a huge data dump to be loaded into the server.
  - An antivirus system is also needed to screen the files that are being uploaded by the student to prevent contamination to the system.
  - File type filtering is also preferred based on assignment needs.
    - If the instructor wants a pdf file to be uploaded by the student, the system should be able to handle to accept on pdf files from the student and no other file types.
- Grading assignments/Providing feedbacks
  - Same with submitting comments/messages, a limit is needed prevent unwanted long messages.
    - A word file attached to be sent back to the student for review is a preferred choice of action, that way it won't be restricted on character limit.
- Website text input fields
  - Proper filtering will need to be done on the text fields to prevent database data deletion from outsider.
    - Input sanitization is required on all input field that will affect database performance.

- Logs
  - Logs are required to record all traffic made by all users.
    - A safety precaution to backtrack on any mistake.
    - A good way to debug problem by system admins when situation appears.

Step 4:

The system constraint is then identified by researching and knowing in advance what type of hardware and component needed by this system:

- Database
  - A database is required to handle the records of students' submission and their responses that is attached.
  - The same database can then also be used to handle the students' grade after the TAs or the instructors has graded them.
  - A DBMS software is required to handle the database management to allow fast entries.
- Storage
  - A vast amount of storage is required to store and contain all the information about the Assignment Submission System.
  - Storage is also needed to store students' submission if they have a source code file to submit. A big file size is anticipated when handling source codes or files regarding to huge programs.
- Website
  - An interface or an UI is needed to allow student, TAs, instructors, and system admins to interface with the system.
  - A clear and easy to use interface is required to allow users to navigate across the system
  - A Linux/Unix based system will be the best choice to implement the system with apache installed to route the required traffic to the right place.
- Internet/Network Connection
  - A network connection is expected to have for a web server to operate on.
  - A strong network connection with a big bandwidth must be available to the system/server running to handle big enough traffic if all the students decided to submit at the same time or if the instructor only allows a specific window of upload submission time.
  - A backup internet connection in case a blackout occurs with the internet service provider.
- Server/Physical Location
  - A working server setup is required to house the entire system in place with proper electricity and backup generator to ensure that the system will not face a blackout.

- A duplicate server to also serve as a backup to the original server as a failsafe in case the server experiences a fatal failure.