IT314 - Software Engineering

Group 26

Online course management system

Lab 4

Specifying Tools and Technology

Team Members:

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A. You must finalize/identify the tools, technologies, and frameworks you will use to develop/implement your project.

Tools and Technologies :

1. **Front end**
   a. ReactJs
   b. Material UI
2. **Back end**
   a. NodeJs
   b. ExpressJs
   c. MongoDB (Mongoose library)
   d. JsonWebTokens
   e. Redis (For caching)

B. For your project, you have to use the NoSQL databases of your choice strictly, and you can also explore and use ElasticSearch (DB) Database for the same.

- MongoDB
- Redis

C. Estimate the effort of your project and narrow down the scope based on the estimation. You can apply Function Point (for user stories) or Use Case Size Point (for use cases) for estimation.

1. External inputs

a. **Course Registration:** This refers to the functionality of allowing students to register for courses online. It includes capturing information such as the **student's name, course code, the course title, and course schedule.**

b. **Course Material Upload:** This functionality allows instructors to **upload course materials** such as lecture slides, assignments, and other resources. It includes capturing information such as the file name, file type, and the course to which the material belongs.

c. **User Authentication:** This functionality allows users to **log in** to the system using their username and password. It includes capturing the username, password, and user type (e.g., student, instructor, administrator).

d. **Student Feedback and Communication:** This functionality allows students to provide course feedback. It includes capturing the course code, instructor name, feedback comments, and rating. It also includes communication between the instructor and students.

e. **Course Search:** This functionality allows users to search for courses based on different criteria, such as course code, the course title, the instructor name, and the course schedule. It includes capturing information such as the search keywords and the search criteria.

2. External outputs:

External outputs refer to the information that the system produces or sends out to external entities or users.

a. **Course Material Download:** The system may allow students to download course materials uploaded by instructors, such as lecture slides, assignments, and other resources.

b. **Grade Report:** The system may generate a report that shows a student's grades for all courses taken, including the course code, title, instructor name, and grade.

c. **Course Evaluation Report:** The system may generate a report summarizing student feedback on a particular course, including the course code, instructor name, feedback comments, and rating.

d. **Student Progress Report:** The system may generate a report that shows a student's progress in a particular course, including the course code, title, instructor name, and percentage of completed work.

3. Internal Files

Internal logical files refer to the files or data maintained by the system to support its functionality.

a. **Student Information File:** This file would contain information about each student, such as their name, email address, and enrolled courses.

b. **Course Information File:** This file would contain information about each course, such as the course code, title, instructor name, description, and course materials.

c. **Announcements File:** This file would contain information of all announcements, announcements related to the particular course, announcement description, etc.

d. **Instructor Information File:** This file would contain information about each instructor, such as their name, email address, courses offered, etc.

e. **Course Material Information File:** This file would contain information about the course materials uploaded by instructors, including the file name, file type, and the course to which the material belongs.

f. **Message and Comment Information File:** This file would contain information about the messages provided by students in each course discussion group. This file would contain all the comments, also.

4. External inquiries

External interfaces refer to the interactions between the system and external entities or systems.

- No external inquiries are available to this system as of now.

5. External interfaces

- No external interfaces are available to this system as of now.

Sr. no.	Measurement parameters	Average Weight	Count	Weighing factor
1.	External Inputs	6	5	30
2.	External Outputs	7	4	28
3.	External Inquiries	4	0	0
4.	Internal Files	10	6	60
5.	External interfaces	3	0	0
Count Total				**118 Hrs**

➢ **Calculation of $\sum(f_i)$:**

Here is the rating of all the 14 questionnaires on a scale of 0 to 5.

Sr. No.	Questions	Rating
1	Does the system require reliable backup and recovery ?	5
2	Are data communications required?	3
3	Are there distributed processing functions?	1
4	Is performance critical?	5
5	Will the system run in an existing, heavily utilized operational environment?	2
6	Does the system require online data entry?	5
7	Does the online data entry require the input transaction to be built over multiple screens or operations?	4
8	Are the master files updated online?	4

9	Are the inputs, outputs, files, or inquiries complex?	3
10	Is the internal processing complex?	3
11	Is the code to be designed reusable?	5
12	Are conversion and installation included in the design?	3
13	Is the system designed for multiple installations in different organizations?	0
14	Is the application designed to facilitate change and ease of use by the user?	4
$\sum(f_i)$		**47**

FP = Count Total * [0.65 + 0.01 * ∑(fi)]

FP = 118*[0.65+0.01*47]

FP = 132.16 Hrs