- **McCall's Software Quality Factors Model**
  - **Course Management System**

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1-Product Operation

-Correctness

-Reliability

-Efficiency

-Integrity

-Usability

Correctness:

1-Output mission : list of students with all courses and instructor

Bank question to all courses

2. Required accuracy: probability of a non-accurate output <1%.

3. Completeness: System should be used on any platform to ease the students access to get the materials and solve their assignments.

4. Up-to-datedness: no more than 2 days for informing the student his grade.

5. Availability: system should be working all the time and downtime doesn't exceed 1 minute.

6. Standards: software and its documents to comply with student’s guidelines

Reliability:

- One of requirement of this SW (personalize course management system) is not to fail . this SW is designed to handle and secure users data(e.g. students , instructors) . in addition the time to recovery will not exceed more than 1 hour .

Efficiency:

- A course management system is considered to have hard ware components that deal with SW in high sped of processing so the processors are expected to handle millions of instructions per second
- . the storage capabilities should be huge to store all the SW data (users data , courses materials).so the behavior of action and reaction must not exceed MS

Integrity:

- who can access our system
- 1-This document is expected to be read by the managers, System engineers, System test engineers System maintenance engineers

and the client.

no one else have the authority for accessing this system.

- 2-The instructor should be able to view and print student report about one of his courses
- 3-Instructor should be able to review student progress during course via his history and grade, then make a report about his student.

Usability:

- Using this system the student can be able to register easily as there is documentation that describe all steps of register him/her self, pick the courses he wants, get feedback on his assignments , exams, overall course history and view the materials whenever needed.
- The system is able to recommend the student to prioritize certain course materials before the others depending on the student learning style.
- The instructor should be able to make assignments using the external questions bank system by hand picking the questions, he also should be able to generate exams according to certain difficulty criteria and certain number of questions and view each student history enrolled in his courses ,view and print reports on his courses.
- Using this system the student should be able to register, pick the courses he wants, get feedback on his assignments, exams, overall course history and view the materials whenever needed.
- The system is able to recommend the student to prioritize certain course materials before the others depending on
- he also should be able to generate exams according to certain difficulty criteria and certain number of questions
- and view each student history enrolled in his courses ,view and print reports on his courses.

2-Product Revision Factors

-Maintainability

-Flexibility

-Testability

Maintainability:

- In our project there is maintenance engineers who are responsible for the system when any problem is occurred , they should be able to fix it .
- The system should be working all the time and downtime shouldn’t exceed 1 minute and this will occur when there are maintenance engineers.

- Flexibility:

-Assignment can be solved more than once to improve the score

-The interface should show the upcoming assignments with timer

and the number of its answered questions.

-Each Student recommended course list should be viewed in his profile page in recommended course page.

- System should be easy to use after a short 5 minutes tutorial to demonstrate its functions

Testability:

- The are unit test w integration test .
- The unit test for testing every method or module in our project and the integration test for testing the project.
- Software testability is one of important concepts in design, and testing of software program and components. Building programs and components with good testability always simplifies test operations, reduces test cost, and increases software quality.
- One way to improve the maintainability of a software system is the design for testability, which can address different aspects of software including size, complexity, system structure, built-in-test facilities, distribution, and non-determinism.

3-Product Transition Factors

-Portability

-Reusability

-Interoperability

Portability:

- System should be used on any platform to ease the students access to get the materials and solve their assignments

Reusability:

- We can use the components and modules from our project and apply established processes but make some edits to construct a new software project such as university management system.
- In the new project the students can register and create account and from this account they can get materials and submit assignments and the professors can assign assignments and make online exams.
- Without the reuse of well-proven components or modules we have to rebuild and relearn these components, modules again and this will waste more time.

Interoperability:

- The SoftWare of personalize course management system is required to process users results(e.g. Students courses that they are joined to)
- To use them to get questions from bank question system .