Software Project Management – Assessed Exercise 2

Introduction

The Gaelic University wishes to implement a software solution to record the grades of pupils and make them visible to those who need to see them. The task will be undertaken be a project student as part of their degree. The student will be able to spend 30 ideal working days, spread over 60 days, upon the project. The purpose of the system is to allow programme directors to decide on whether a student has passed the year, and for academic advisors to monitor the progress of their students. It is also envisioned that the system will allow students to enrol upon courses. The project will adopt an agile "Scrum" approach and use the user stories technique. A student will act as the proxy for each user role.

User Roles

The initial brainstorming provided 7 user roles: undergraduate student, postgraduate student, mature student, academic advisor, academic administrator, science programme director and humanities programme director. The first 3 roles were combined to a single student role. Humanities programme director and science programme director simply became programme director. The four final user roles can be seen below.

Role – Student	Role – Academic Administrator
Frequency of use – Little	Frequency of use – Often
Knowledge of university practices – Medium	Knowledge of university practices – Low
Computer expertise – High	Computer expertise – High
Goals – To select the courses they wish to study, to check their grades and to find out if they have passed.	Goals – To correctly fill out the grades of all the students.

Role – Academic Advisor	Role – Programme Director
Frequency of use – Medium	Frequency of use – Medium
Knowledge of university practices – High	Knowledge of university practices – High
Computer expertise – Medium	Computer expertise – Medium
Goals – To check up on student grades to see if they are performing adequately.	Goals – To judge whether a student has performed well enough to pass the year.

Two personas were created for the roles which use the system the most, student and administrator. Billy is a 3rd year computer science student and Brenda is the academic administrator for the computing department. This aided in adding context to the user stories.

Billy

Story:
As a student I want to view my course options so that I can make an informed choice.

Conversation:
Students should not be able to view courses they are not eligible for.

Story points - 4

Acceptance Tests:

View course options. All available courses are displayed.

Given that the course choices have not yet been finalised, when the student attempts to view them, the student will be told they are not yet available.

Given that a student is not eligible to take a course, when the student views his options, it should not be visible.

Billy

Story:
As I student I want to enter my course choices so that I can be enrolled.

Conversation:
Students must enrol on compulsory courses.
Students cannot enrol on the same course twice.
Students should not be able to enrol on courses that clash

Story points - 4

Acceptance Tests:

Enter course choices. Course choices are updated.

Given that the student is already enrolled upon the course, when they attempt to enrol, it should not be successful and they should be informed that they are already enrolled.

Given that the student has not chosen all their required courses, when they attempt to enrol, they should be informed which courses they need to choose to proceed.

Given that the there is a timetable clash with another course, when the student attempts to make a change, the system will not allow it and the student will be informed there is a clash.

Billy

Story:
As I student I want to change my course choice so that I can take subject A instead of subject B.

Conversation:
Students cannot change onto a course they already take.
Students cannot change onto courses which clash with ones they already take.

Story points - 2

Acceptance Tests:

Change from subject A onto subject B. Course choices are updated.

Given that the student has already chosen the subject B, when the student attempts to make the change, the system will not allow it and the student will be informed he is already enrolled.

Given that the there is a timetable clash with another course, when the student attempts to make a change, the system will not allow it and the student will be informed there is a clash.

Billy

Story:
As a student I want to be able to view my grades so that I know how I have done.

Conversation:
Students should be informed if the grade is yet to be released.

Story points - 2

Acceptance Tests

View grades for selected course. These should be accurate.

Given that a grade has not been entered into the system, when the student attempts to view it, they will be told that it is not yet available.

Billy

Story:
As a student I want to be able to view the outcome of my year so that I know whether I have passed.

Conversation:
Students should be informed if a decision is yet to be made.

Story points – 1/2

Acceptance Tests:

View whether the year has been passed or failed. The outcome should match that entered by the programme advisor.

Given that the year outcome has not been decided, when the student attempts to view it, they will be informed a decision has not been made.

Brenda

Story:
As an administrator I wish to enter a student's grades so that they can be viewed by other staff and students.

Conversation:
Administrators should be able to override grades that have already been entered. Grades should be entered as numerical values between 0 and 100.

Story points - 4

Acceptance Tests:

Enter a student's grade onto the system. Ensure the student can view the grade.

Given that a student has not enrolled on a course, the administrator should not be able to enter a grade for it.

Given that an invalid grade is entered, the user should be notified and allowed to re-enter the grade.

Given that a grade has already been entered into the system, when the administrator attempts to enter it again, the first grade should be overridden.

Brenda

Story:
As an academic administrator I wish to enter new courses in the system so that students can pick them.

Conversation:
The same course cannot be added twice. All required course details must be filled in.

Story points - 2

Acceptance Tests:

Enter a new course onto the system. Course list is updated.

Given that the course is already in the system, when the user attempts to add the course, it will not be successful and a message will be displayed.

Given that not all required details have been entered, when the user attempts to add a course, they should be prompted to enter the missing information

Brenda

Story:
As an academic administrator I wish change the details of a course so that they can be kept up to date.

Conversation:
All required course details must be filled in.

Story points - 1

Acceptance Tests:

Change the details of a course. Course is updated.

Given that key information is missing from the course details, when the administrator attempts to confirm changes, they should be prompted to enter missing information.

Role – Academic Advisor

Story:
As an academic advisor I want to be able to view a student's mark sheet so I can tell how they are doing.

Conversation:
Advisors should be informed if a grade is yet to be released.

Story points - 4

Acceptance Tests

View a student's mark sheet. All grades are accurate.

Given that the grades have not been entered into the system, when the advisor attempts to view the mark sheet, they will be informed that the course is yet to be graded.

Given that a student has not enrolled upon a course or has switched to another course, when the advisor views the mark sheet, the course should not be visible.

Role – Academic Advisor

Story:
As an academic advisor I want to be able to see whether a student has passed the year so I can advise them.

Conversation:
Advisors should be informed if a decision is yet to be made.

Story points – 1/2

Acceptance Tests

View whether the year has been passed or failed. The outcome should match that entered by the programme advisor.

Given that the year outcome has not been decided, when the advisor attempts to view it, they will be informed a decision has not been made.

Role – Programme Director

Story:
As a programme director I want to be able to see a student mark sheet so I can decide whether they have passed the year.

Conversation:
Programme directors should be informed if a grade is yet to be released.

Story points - 4

Acceptance Tests:

View a student's mark sheet. All grades are accurate.

Given that a grade has not been entered into the system, when the director attempts to view the mark sheet, they will be informed that the course is yet to be graded.

Given that a student has not enrolled upon a course or has switched to another course, when the director views the mark sheet, the course should not be visible.

Role – Programme Director

Story:
As programme director I want to be able to pass a student so that they can move onto the next year

Conversation:
The result must become immediately available to the student and their academic advisor.

Story points - 2

Acceptance Tests:

Enter into the system that the student has passed. Ensure that the student can view this.

Enter into the system that the student has passed. Ensure that the academic advisor can view this.

Role – Programme Director

Story:
As a programme director I want to be able to fail a student so that they are not able to progress to the next year.

Conversation:
The result must become immediately available to the student and their academic advisor.

Story points - 2

Acceptance Tests

Enter into the system that the student has failed. Ensure that the student can view this.

Enter into the system that the student has failed. Ensure that the academic advisor can view this.

Role – Programme Director

Story:
As a programme director I want to be able to see the course statistics so I can make an informed decision upon whether a student should pass the year.

Conversation:
Programme directors should be informed if grades are yet to be released.

Story points – 4

Acceptance Tests

View the course statistics. The statistics are accurate.

Given that course grades have not yet been entered into the system, when the director attempts to view the course statistics, they will be informed that they are not yet available.

Constraint

Story:
Students should not be able to enrol on more than 60 credits per semester.

Conversation:
Students should not be allowed to enrol on more courses than they are required to.

Story points - 0

Acceptance Tests:

Given that 60 credits have already been chosen, when the student attempts to add more, they will be told they have already enrolled in 60 credits.

Constraint

Story:
Students should not be able to change course choices after a deadline.

Conversation:
Students should not be able to change courses once teaching has started.

Story points - 0

Acceptance Tests:

Given that the deadline has passed, when the student attempts to change courses then, they will notified that the deadline to change courses has passed.

Constraint

Story:
Academic advisors should only be able to see the grades of students that they advise.

Conversation:
For privacy reasons, grades should only be viewed by those that need to see them

Story points - 0

Acceptance Tests:

Given that an academic advisor does not advise a student, when the advisor uses the system, they should not be able to view the students grades.

Release Plan

The programme is required in 60 days. In this time period 30 ideal working days can be achieved. A story point will be defined as one ideal working day for the purposes of this project. The decision has been made to have 3 iterations, each of 20 days. Thus, 10 story points will be completed in each iteration. As there is only one programmer, the overall project velocity will be 10 points per iteration.

In keeping with the scrum process there will be a review and retrospective at the end of every iteration, these meetings will involve the student programmer working on the project and their supervisor. The purpose of these is to assess and demonstrate the progress of the project, and to look for improvements. The student and supervisor will also meet briefly each day to mimic the "daily scrum". There are no "epic" user stories, so a spike has not been planned.

Through consultation with the proxy customers, the user stories have been split into high priority "Must Haves" and low priority "Should Haves", these can be seen below. Must haves will be assigned to earlier iterations and should haves will be assigned to later iterations.

Must Have Stories

- As a student I want to view my course options so that I can make an informed choice.
- As I student I want to enter my course choices so that I can be enrolled.
- As a student I want to be able to view the outcome of my year so that I know whether I have passed.
- As an academic advisor I want to be able to see whether a student has passed the year so I can advise them.
- As an academic administrator I wish to enter new courses in the system so that students can pick them.
- As an administrator I wish to enter a student's grades so that they can be viewed by other staff and students.
- As a programme director I want to be able to see a student mark sheet so I can decide whether they have passed the year.
- As programme director I want to be able to pass a student so that they can move onto the next year.
- As a programme director I want to be able to fail a student so that they are not able to progress to the next year.

Should Have Stories

- As I student I want to change my course choice so that I can take subject A instead of subject B.
- As a student I want to be able to view my grades so that I know how I have done.
- As an academic administrator I wish change the details of a course so that they can be kept up to date.
- As an academic advisor I want to be able to view a student's mark sheet so I can tell how they are doing.
- As a programme director I want to be able to see the course statistics so I can make an informed decision upon whether a student should pass the year.
- Students should not be able to enter more than 60 credits per semester.
- Students should not be able to change choices after a deadline.
- Academic advisors should only be able to see the grades of students that they advise.

Iteration Plan

As stated in the release plan, there will be 3 iterations of 20 days, and the student programmer undertaking the project will work at a velocity of 10 story points per iteration. The user stories that will be assigned to each iteration can be seen below. These stories were assigned in priority order after consultation with the customer, ensuring that they are not entered into the iteration backlog until prerequisites have been completed. An iteration burndown chart is shown in appendix 1, this is to be filled in by the student as the project progresses.

Iteration 1 – 10 story points
- As a student I want to view my course options so that I can make an informed choice. (4 points)
- As I student I want to enter my course choices so that I can be enrolled. (4 points)
- Students should not be able to enter more than 60 credits per semester. (0 points)
- As an academic administrator I wish to enter new courses in the system so that students can pick them. (2 points)

Iteration 2 – 10 story points
- As an administrator I wish to enter a student's grades so that they can be viewed by other staff and students. (4 points)
- As a programme director I want to be able to see a student mark sheet so I can decide whether they have passed the year. (4 points)
- As programme director I want to be able to pass a student so that they can move onto the next year. (2 points)

Iteration 3 – 10 story points
- As a programme director I want to be able to fail a student so that they are not able to progress to the next year. (2 points)
- As a student I want to be able to view the outcome of my year so that I know whether I have passed. (1/2 point)
- As an academic advisor I want to be able to see whether a student has passed the year so I can advise them. (1/2 point)
- As a student I want to be able to view my grades so that I know how I have done. (2 points)
- As an academic advisor I want to be able to view a student's mark sheet so I can tell how they are doing. (4 points)
- Academic advisors should only be able to see the grades of students that they advise. (0 points)
- As an academic administrator I wish change the details of a course so that they can be kept up to date. (1 point)

There is a total of 17 user stories that require an estimated 36 story points to complete. The 3 iterations contain a total of 30 story points. Thus, not all stories can be completed before the deadline. There are 3 stories that cannot be completed in the iteration plan, worth a total of 6 story points. These are shown below. These stories will be completed in a subsequent release.

Remaining Stories – 6 story points
- As I student I want to change my course choice so that I can take subject A instead of subject B. (2 points)
- Students should not be able to change choices after a deadline. (0 points)
- As a programme director I want to be able to see the course statistics so I can make an informed decision upon whether a student should pass the year. (4 points)

Appendix 1 – Iteration Burndown Chart