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# **COURSE GAME PROJECT MANAGEMENT PLAN**

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Version 1.0

10/05/2016

## VERSION HISTORY

Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	Group 2	05/10/16	Project Manager	05/10/16	Final draft of the project planning document

NAME	Task Assigned
Jaspreet Chabbra - 201512016	Introduction, scope management, Work breakdown structure, Deployment Plan, Change control management, Milestone/activities, Project Schedule, Dependencies, Gantt Chart, Cost/Budget Management, Quality Management, Risk Management, Activity Network, CPA for each module, Tracking of the project activities, Pert chart, documentation
Mansi Shah – 201512025	Introduction, scope management, Work breakdown structure, Deployment Plan, Change control management, Milestone/activities,, Dependencies, Gantt Chart, Cost/Budget Management, Quality Management, Risk Management, Activity Network, CPA for each module, Tracking of the project activities, Pert chart, documentation
Dishant Patel - 201512089	Deployment Plan
Hardik Bohra - 201512062	Risk Management
Chintan Patel- 201512006	Risk Management
Hardik Thakker- 201512084	-
Kush Shah- 201512042	Dependencies
Fatema Kapadvanjwala -201512018	-
Palash Khandelwal - 201512072	Quality Management

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## **1. Introduction**

Use of educational games is increasing in education everywhere in classroom and also for people learning at home. Few years back when there was less amount of choices for educational games finding relevant game to use was a difficult task so people used the game which was available even if it was not proper or they didn't used one. Today however, finding relevant games has become a daunting task as the amount of possible games to choose from has increased severely, and so we have also decided to contribute a Course game for the student of DAIICT and also for people outside DAIICT who wish to play this game which will make the learning for the students interesting in a new way and help them to relate real life scenario while applying the theoretical knowledge learned in the classroom.

## **2. Scope Management**

### **❖ Course Game Application**

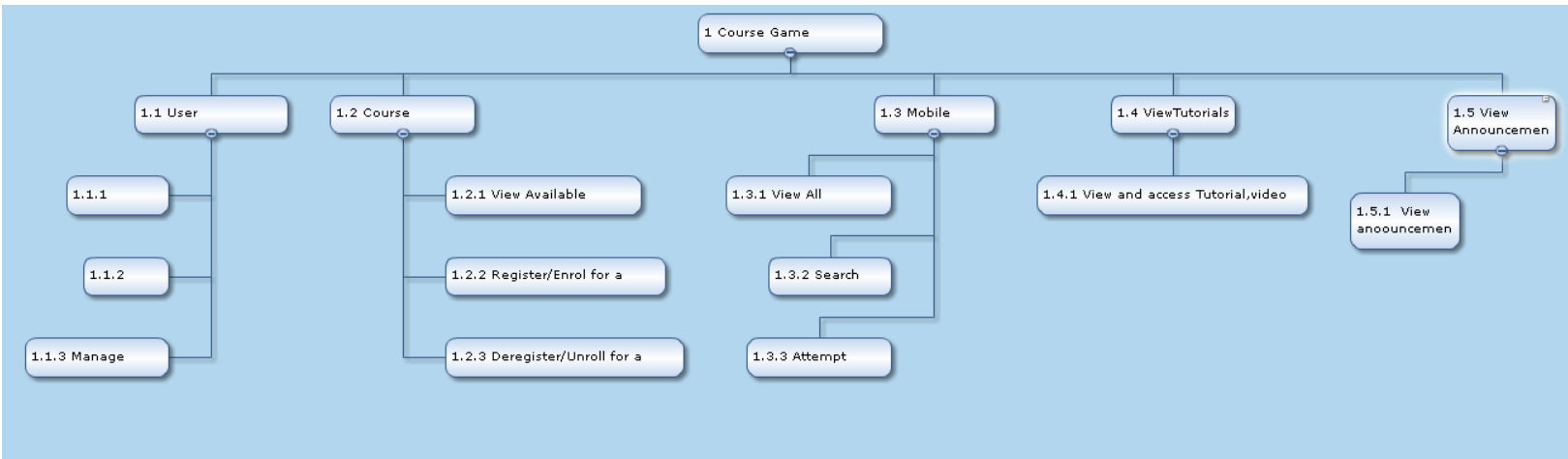
- User management
- Course Selection
- Mobile Game
- View Announcements
- View Tutorials

### **❖ Content Management System**

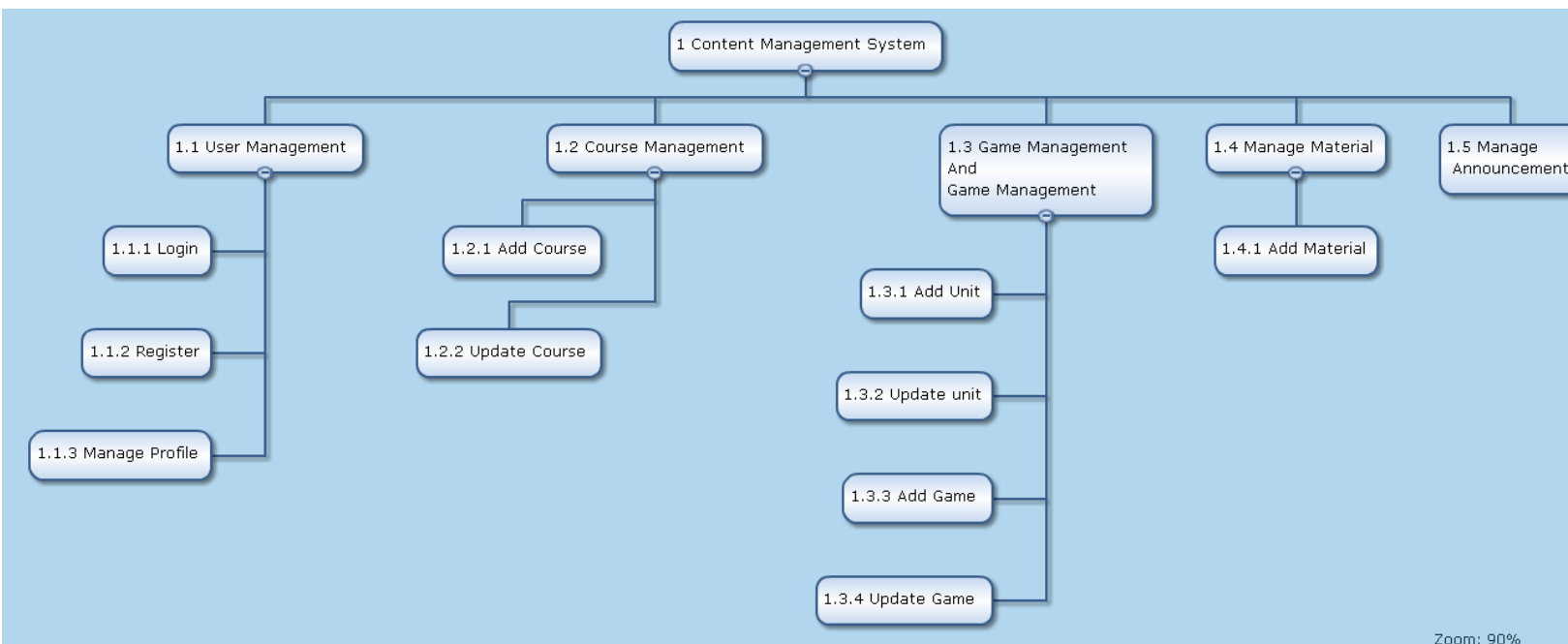
- User Management
- Course Management
- Unit and Game Management
- Manage Material
- Manage Notification

### **2.1 Work Breakdown Structure**

## Course Game Application WBS



## Content Management System



Zoom: 90%

## 2.2 Deployment Plan

The Basic Deployment Strategy to be followed is Continuous Integration.

- Continuous Integration of the code will be made using Github (is a web based Git repository hosting service) where the code will be pushed on regular basis.
- GitHub makes the required updates in the Staging host (A server used as a temporary stage to test new or revised Web pages before they are made live.)

- After the application is ready to deliver to the client, it will be hosted or pushed to Production host i.e the application server.
- The Content Management System or the web interface for the instructor will be on the application server and will be accessed using API.
- The Course Game Mobile Application for the end users will be uploaded on the play store by following a series of steps. After uploading, it will be available for the end users to and can be installed on Android devices.
- The Database that will be on mlab and heroku server which provide interface for creating mongo db so it can be accessible by from anywhere.

Deployment Plan reference image link  
[deploymentplan.jpg](#)

## 2.3 Change Control Management

### ❖ Change Control in Content Management System

1. **If the faculty wants a mobile application in near future to synchronise with the game** then we will be building a cross platform web application that will be compatible with the mobile as well.
2. **If in the near future the platform is made available to other faculties to register for various courses then** provision for the same is made in the database schema and changes in the course management module will be required and other modules or activities will not get affected.
3. **If the faculty wants to personally message an individual then** a new module to fulfil this requirement will have to be made and activities corresponding to this module needs to be identified.
4. **If the faculty wants to see how many students are active at the moment then** for this change we need to make changes in the database schema.
5. **If the faculty wants to know which all students have seen or read the notification and who all have not then** Changes in the announcements module will be made and new activities will be created but this will not affect the database schema.

### ❖ Change control in Course Game Application

1. **If the client wants to include a typical quiz along with the game then** a module for Quiz will be created i.e existing modules will not be able to suffice this requirement.
2. **If the client wants to have a discussion platform like Stack overflow then** a module for Question Answer portal will be created i.e existing modules will not be able to suffice this requirement.

3. **If the client wants to have a system that gives recommendation about the specific topics to the students whose scores are less than the required number then a whole new process will required to be followed to develop a new recommendation system that can make use of APIs provided by the third party.**

### **3. Schedule/Time Management**

#### **3.1. Milestones/activities**

##### **❖ Course Game Application**

<b>Milestones</b>	<b>Estimated Completion Timeframe</b>
User Management (It includes registration and login of the faculty who will be an instructor. Faculty can manage his/her profile.)	9
Course Selection (It includes selection of a course from the entire available course. Enrol/register for a course or Unroll/deregister for a course.)	4
Mobile Game (After registering for a course student can view all the topic/unit or can search for a topic/unit. After selecting a topic he/she can attempt a topic/unit and view solution for the same.	5
Game Development (It includes various games based to topics.)	27
View Tutorial and announcement (It includes viewing and accessing of material made available to the student and view announcement made for the course.	4

##### **❖ Content Management System**

<b>Milestones</b>	<b>Estimated Completion Timeframe</b>
User Management (It includes login for the admin and faculty, authentication of a student and deactivation of a student.)	9
Course Management (It includes adding a course, updating and deactivating a course.)	8
Game Management (It includes adding a topic/unit in a course, updating the criteria for a game, manage the topic/units etc.	18
Manage Material (It includes Adding or removing material to the course.	5
Manage Announcement (It includes sending notification for important announcement to me made for the course.)	5

## 3.2. Project Schedule

Link [ProjectSchedule CourseGame 2.xlsx](#)

### 3.2.1 Dependencies

#### 3.2.1.1 Internal Dependencies

#### Content Management System

<b>Activities</b>	<b>Dependencies</b>	<b>Time</b>
Register	-	4
Login	Register	3
Manage Profile	Login	2
Add Course	Login	4
View Course	Add course	5
Update Course	Add and update course	4
Deactivate Course	Add course	4
Add Unit/Topic	Add Course	9
Manage Unit	Add Unit/Topic	5
Add Material	Add Unit/Topic	3
Manage Announcements	Add Course	5



## Course Game Application

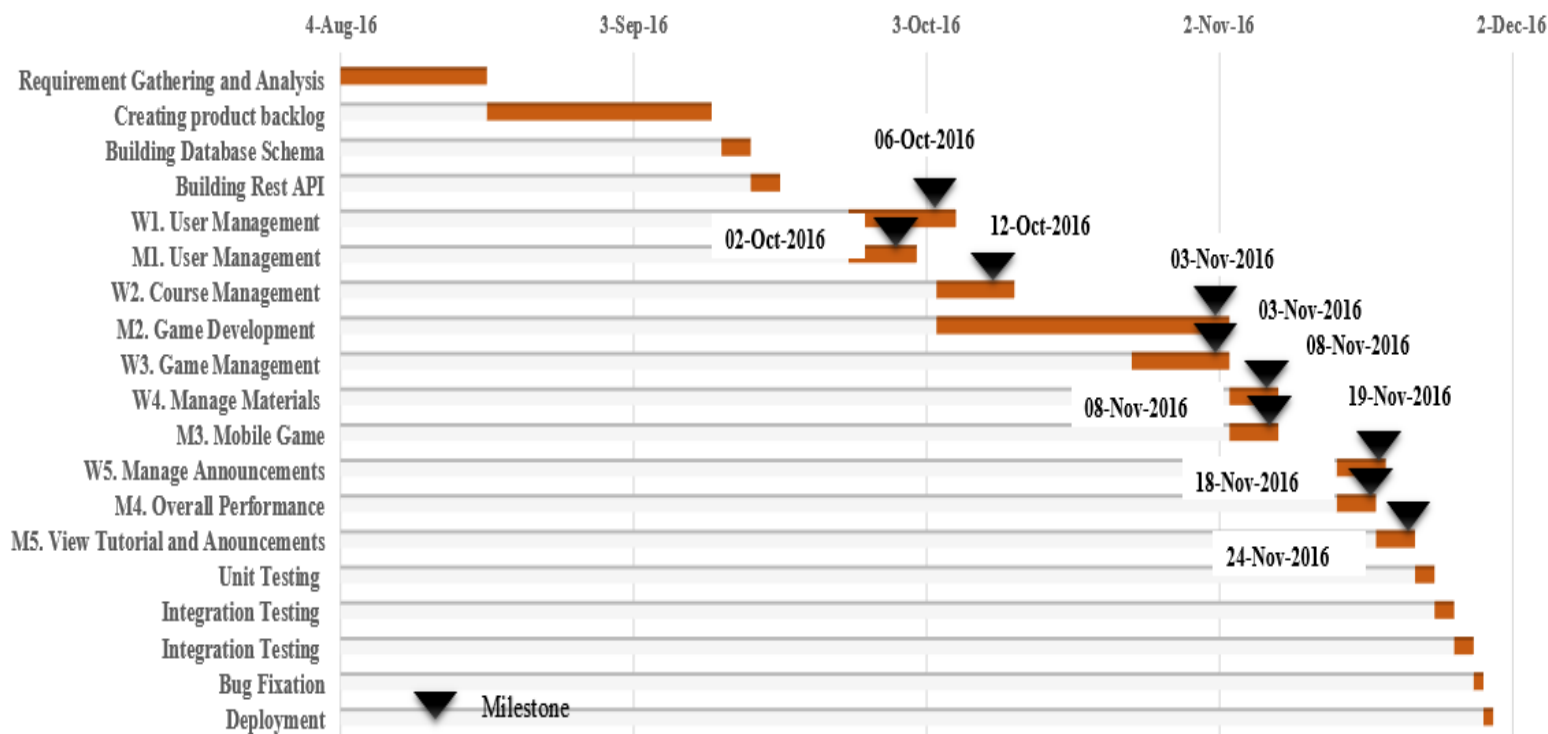
Activities	Dependencies	Time
Register	-	3
Login	Register	2
Manage Profile	Login	2
View and Register Course	Login	3
Deregister Course	Register for a course	1
Game- Unit1/Level1	Register for a Course	4
Game- Unit1/Level2	Game- Unit1/Level1	4
Game- Unit2/Level1	Game- Unit1/Level2	4
Game- Unit2/Level2	Game- Unit2/Level1	5
Game- Unit3/Level1	Game- Unit2/Level2	5
Game- Unit3/Level2	Game- Unit3/Level1	5
View Unit/Topic	Register for a course	5
Select Unit/Topic	Register for a course	1
Play Game	Register for a course	1
View Tutorial	View Unit/Topic	4
View Announcement	Register for a course	4

### 2.2.1.2 External Dependencies

- Software dependency such as software that are used to develop the web and mobile applications. e.g Create JS, Node JS, react JS etc.
- Dependency on the API developed and also on the server it is hosted on eg Heruko.

## 3.2.2 Gantt Chart

Image link - [GanttChart.png](#)



## 4. Cost/Budget Management [Effort and Software Size Estimation]

### ❖ Estimation through object points

#### 1. Calculations of screens

##### 1.1 Content Management System

Module :User Management	
View	Number of Screens
Login	1
Registration	1
Manage Profile	1
Module : Course Management	
View	Number of Screens
Add Course	1
Update Course	1
Deactivate Course	1

Module : Game Management	
View	Number of Screens
Add Topic/Unit	1
Update Topic/Unit	1
Manage Topic/Unit	1
Manage Points	1
Module : Manage Material	
View	Number of Screens
Add Material	1
Remove Material	1
Module : Manage Announcement	
View	Number of Screens
Manage Announcement	1

## 1.2 Course Game Application

Module :User Management	
View	Number of Screens
Login	1
Registration	1
Manage Profile	1
Module : Course Selection	
View	Number of Screens
View Available Course	1
Register Course	1
Deregister Course	1
Module : Mobile Game	
View	Number of Screens
View All Topic/Unit	1
Game Development	6
View Solution	1
Module : Overall Performance - Dashboard	
View	Number of Screens
View Leader board	2

View Statistics	3
Attempted Topics	1
Module : View Tutorials and announcement	
View	Number of Screens
View Announcement	1
View Tutorial	1
<b>Total number of Screens</b>	<b>36</b>

## 2. Calculations of Reports

Report Name	Number of Reports
Statistics/Performance of a student(Mobile App)	5
Game Statistics for instructor(CMS)	5
Course Statistics for instructor(CMS)	5
<b>Total</b>	<b>15</b>

## 3. Total Number of 3GL components =10

### Object Counts:

25 Simple Screens	25 * 1	25
2 Medium Screens	2 * 2	4
1 Difficult Screen	1 * 3	3
3 Medium Reports	3 * 5	15
10 CGL components	10 * 10	100
<b>NOP</b>		<b>147</b>

Estimated productivity is **NOMINAL = 13 Object points = PROD**

$$\begin{aligned}
 \text{Effort in p-m} &= \text{NOP/PROD} \\
 &= 147/13 \\
 &= 11.30 \text{ p-m}
 \end{aligned}$$

## 5. Quality Management

### ❖ Course Game Application

User Management	
Register	Only Students will be allowed to register by providing valid information.
Login	User cannot login if he/she provide wrong username or password
Manage Profile	This option will be available only after login. Only registered users with correct login credentials can see this page.
Mobile Game	
View all Units	Only after registration this option will be visible. Only those units will be shown which have been made visible by the faculty.
Play Game	Only those games will be shown which have been made visible by the faculty.
View Tutorials	
View and access tutorials and videos	Tutorials which are authentic and provided by the respective faculty will be shown to the students. Only students registered to that particular course can see the tutorials

### ❖ Content Management System

User Management	
Login	Only correct credentials will allow anyone to log in
Register	Only faculty will be allowed to register by providing valid information.
Game Management	
Add unit	List of previously added units will be provided so that admin can see the units which are already added. Units will be available to students for a particular period of time which will be given by admin.
Update tunit	All sort of functionalities will be provided to the admin to update units based on various parameters
Manage Materials	Facilities to add tutorials, videos, etc. would be provided
Manage Notifications	One click notification facility would be provided so that admin can send push notification

## 6. Risk Management

### 6.1 Game Unavailability:

As per now, we think that this game scenario will not applicable to all the course projects.

Example: Like for Data Structures, this course game application is perfect, but may be for any programming language course (c++/java) it's not suitable, because they require compilers and all.

**Avoidance Strategy:** To avoid this we decided that to develop the game, we kept in mind for one course only that is Data Structures and Algorithms only.

### 6.2 More Entry for one Course:

There can be the risk like many authorized instructors registered for same course but with different name.

Example: Prof. Punit Bhateja added the Algorithm course with the name 'Algorithms and Sorting' and Prof. Rahul Mutthu added the same course but with the name 'Algorithms'. So these both courses are same but system cannot find both course same.

**Avoidance Strategy:** To avoid this we decided to use the course\_id, which can have the tag for each course, so system can identify the same course easily.

### 6.3 Public access to the course

There can be a possibility that any authorized student can enroll to the available course.

Example: If the course is available to the system, B.Tech students and M.Sc.IT students or student from other college can enroll to that course.

**Avoidance Strategy:** To avoid this, we provided the functionality to the instructor at the time of course creation. In which instructor can provide the limitation to that course. Either course is open for only B.Tech or M.Sc.IT or Public.

### 6.4 Mobile Application for CMS

If the faculty wants a mobile application in near future to synchronize with the game

Example: If faculty wants to make an announcement he need to turn on the PC or Laptop and then make the announcement.

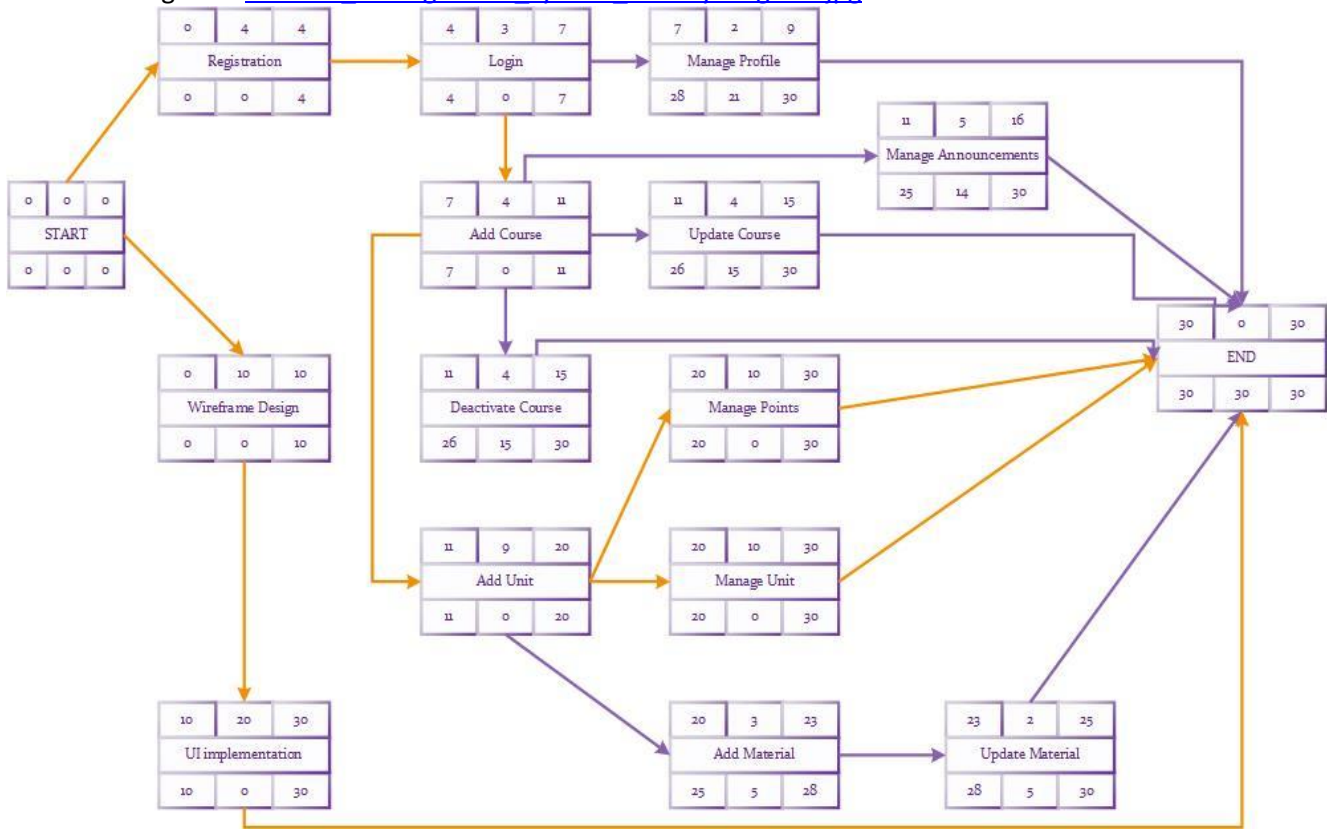
**Avoidance Strategy:** To avoid this, we will be building a cross platform web application that will be compatible with the mobile as well.

## 7. Project Tracking and Scheduling

### 7.1 Activity Network

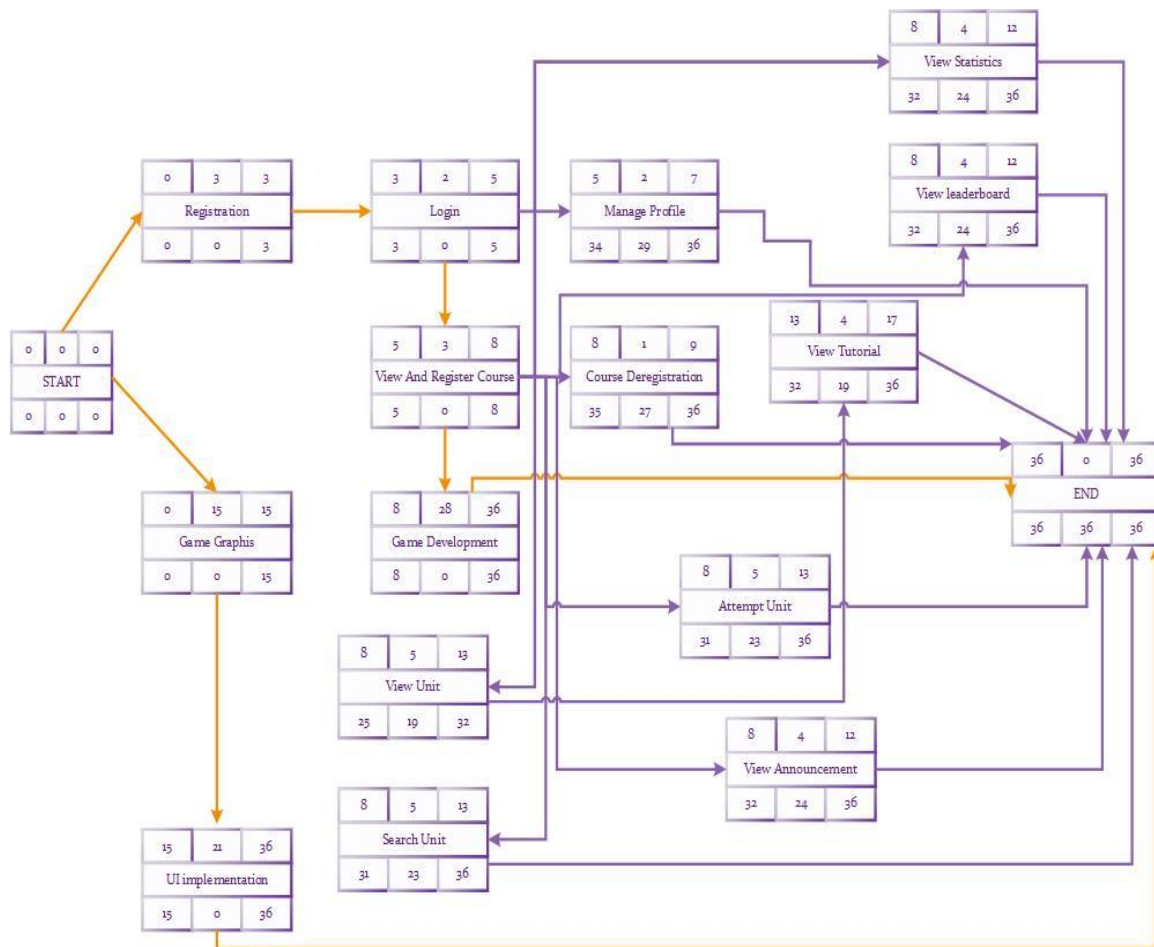
#### 7.1.1 Content Management System Activity network

Image link [Content management system activity diagram.jpg](#)



#### 7.1.2 Course game Management Activity network

Image link [Course game Management Activity network.jpg](#)



## 7.2 CPA for each module

### 7.2.1. Content Management System CPA

All Possible Path	Days
Start->Registration->Login->Manage Profile->END	9
Start->Registration->Login->Add Course->Deactivate course->END	15
Start->Registration->Login->Add Course->Update course->END	15
Start->Registration->Login->Add Course->Manage Announcement->END	16
<b>Start-&gt;Registration-&gt;Login-&gt;Add Course-&gt;Add Unit-&gt;Manage Unit-&gt;END</b>	<b>30</b>
<b>Start-&gt;Registration-&gt;Login-&gt;Add Course-&gt;Add Unit-&gt;Manage Points-&gt;END</b>	<b>30</b>



Start->Registration->Login->Add Course->Add Unit->Add Material->Update Material->END	25
<b>Start-&gt;WireframeDesign-&gt;UI implementation-&gt;END</b>	<b>30</b>

### 7.2.2. Course Game Application CPA

<b>All Possible Path</b>	<b>Days</b>
Start->Registration->Login->Manage Profile->End	7
Start->Registration->Login->View and Register Course->Course Deregistration->End	9
Start->Registration->Login->View and Register Course->Attempt Unit->End	13
Start->Registration->Login->View and Register Course->View Statistic->End	12
Start->Registration->Login->View and Register Course->View Leader board->End	12
Start->Registration->Login->View and Register Course->Search Unit->End	13
Start->Registration->Login->View and Register Course->View Unit->View Tutorial->End	17
Start->Registration->Login->View and Register Course->View Announcement->End	12
<b>Start-&gt;Game Graphics-&gt;UI implementation-&gt;End</b>	<b>36</b>
<b>Start-&gt;Registration-&gt;Login-&gt;View and Register Course-&gt;Game Development-&gt;End</b>	<b>36</b>

## 7.3 Tracking of the Project Activities

### 7.3.1. Content Management System Tracking

<b>Paths to be followed</b>	<b>End Time</b>
Start->Wireframe Design	10
Start->Wireframe->Design->UI implementation	20
<b>Above two activities will execute in parallel with the others</b>	
Start->Registration->Login->Manage Profile	9
Start->Registration->Login->Add Course	4

Start->Registration->Login->Add Course->Update course	4
Start->Registration->Login->Add Course->Deactivate course	4
Start->Registration->Login->Add Course->Add Unit	9
Start->Registration->Login->Add Course->Add Unit->Manage Unit	9
Start->Registration->Login->Add Course->Add Unit->Manage Points	10
Start->Registration->Login->Add Course->Add Unit->Add Material	3
Start->Registration->Login->Add Course->Add Unit->Add Material->Update Material	2
Start->Registration->Login->Add Course->Manage Announcement	5
<b>Total</b>	<b>59</b>

### ***7.3.2. Course Game Application Tracking***

Paths to be followed	End Time
Start->Game Graphics	15
Start->GameGraphics->UI implementation	21
<b>Above two activities will execute in parallel with the others</b>	
Start->Registration->Login->Manage Profile	7
Start->Registration->Login->View and Register Course	3
Start->Registration->Login->View and Register Course->Course Deregistration	1
Start->Registration->Login->View and Register Course->Game Development	28
Start->Registration->Login->View and Register Course->View Unit	5
Start->Registration->Login->View and Register Course->Search Unit	5
Start->Registration->Login->View and Register Course->Attempt Unit	5
Start->Registration->Login->View and Register Course->View Unit->View Tutorial	4
Start->Registration->Login->View and Register Course->View Leader board	4
Start->Registration->Login->View and Register Course->View Statistic	4
Start->Registration->Login->View and Register Course->View Announcement	4
<b>Total</b>	<b>70</b>

## **8. Project Development Schedule and its Tracking**

## 8.1 PERT Chart

Image link [Jaspreet\\_pertChart\\_Final.jpg](#)

Sr no	Activities	Predecessor	Duration
A	Web Interface User Management	-	4
B	Course Management	A	8
C	Add unit	B	5
D	Manage Unit	B	5
F	Manage Material	C	5
G	Manage Announcements	B	5
H	Testing	G	3
K	Mobile Application User Management	-	3
L	View and Register Course	K	3
M	Course Deregister	L	1
N	Game development	K	28
O	View Unit	L	5
Q	Play Game	O	5
S	View Tutorials and Announcements	O	5
W	Testing	S	3
T	Wireframe and Game Graphics	-	15
U	UI Implementation	T	21
V	API implementation		

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## Appendix

### Appendix A: Project Management Plan Approval & Original set of requirements

The undersigned acknowledge they have reviewed the Course game application **Project Management Plan** and agree with the approach it presents. The final (or original) set of requirements (functional and non-functional) agreed by the team for development. Changes to this **Project Management Plan** will be coordinated with and approved by the team mates and the project manager.

#### Original set of Requirements:

##### FR1. Course Game Application

###### FR1.1 User Management

- FR1.1.1 Register

- FR1.1.2 Login

- FR1.1.3 Manage Profile

###### FR1.2 Course Selection

- FR1.2.1 View Available Course

- FR1.2.2 Register/Enrol for a course

- FR1.2.3 Unroll/Deregister Course

###### FR1.3 Mobile Game

- FR1.3.1 View All units

- FR1.3.2 Search unit

- FR1.3.3 Attempt game

###### FR1.4 Overall Performance – Dashboard

- FR1.4.1 View Leader board and Rank

- FR1.4.2 View attempted unit

###### FR1.5 View Tutorials and announcements

- FR1.5.1 View and access Tutorials, Videos etc.

- FR1.5.2 View announcement

##### FR2. Content Management System

###### FR2.1 User Management

- FR2.1.1 Login

- FR2.1.2 Authenticate User

- FR2.1.3 Deactivate User

###### FR2.2 Course Management

- FR2.2.1 Add Course

- FR2.2.2 Update Course

- FR2.2.3 Deactivate Course

FR2.3 Game Management

FR2.3.1 Add unit

FR2.3.2 Update Unit

FR2.3.3 Manage Game

FR2.3.4 Manage Points

FR2.4 Manage Material

FR2.4.1 Add Material

FR2.4.2 Remove Material

FR2.5 Manage Announcement

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