

# PROJECT PROPOSAL FORM

**PROJECT NUMBER: 2**

**PROJECT NAME: EMU Students Kit**

The form is adapted from TÜBİTAK\* – The scientific and technological Research Council of TURKEY, <https://www.tubitak.gov.tr/en>

**\*TÜBİTAK** – The Scientific and Technological Research Council of Turkey (TÜBİTAK) is the leading agency for management, funding and conduct of research in Turkey. It was established in 1963 with a mission to advance science and technology, conduct research and support Turkish researchers. The Council is an autonomous institution and is governed by a Scientific Board whose members are selected from prominent scholars from universities, industry and research institutions.

TÜBİTAK is responsible for promoting, developing, organizing, conducting and coordinating research and development in line with national targets and priorities.

## A.1. Preliminary Project Information

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### A.1.1

Project No	2
Project Name	EMU Students Kit
Start Date	15-Feb-2017
End Date	12-Jun-2017
Time	

### A.1.2

Project Manager/System Architect/Programmer			
Name Surname	Talal Mahdy	ID No	147139
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### A.1.3

Lead Programmer/Database Developer/Administrator			
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### A.1.4

Software Tester/Documenter/Designer			
Name Surname	Abdoulgwad Hussien Elsheredi	ID No	147597
Address	Famagusta, North Cyprus		
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### A.1.5

Requirements Engineer/User Interface Designer			
Name Surname	Adham Moshasha	ID No	148387
Address	Famagusta, North Cyprus		
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## B.1 Introduction to Project

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### B.1.1

#### Summary of Project

The EMU Student Kit is a complex multi-functional Android Mobile Application for designed for EMU with a variety of different functions and features that are beneficiary for students. This application can also be used by any other student and not only EMU students.

### B.1.2

#### Key Words

EMU Student Kit, lectures schedule, time table, interactive map, classroom locations, points of interest, encryption, backup, GPA&CGPA calculator, lecture recorder, note taking, Help.

### B.1.3

#### Reason of Starting Project and Aim of Project

This project was started due to shortage of productivity and organizational applications that are specifically designed for students. Since there are over 20,000 students in EMU, this project aims to improve the performance and time management of students, give them useful information about the University, assist them during lectures, and provide many other beneficiary features for students.

### B.1.4

#### Innovative Aspects of Project

This project is innovative in the sense that there are a very few applications on Google's Play Store which offer a vast set of features for assisting students. This project will be among the first educational applications to be specifically developed for a University's Students. Due to this, the performance, time management and productivity of EMU students may be improved. The application is also going to have a user friendly design and is going to be extremely easy to use with a good source of documentation which will please its users.

### B.1.5

Methods to be Applied
<p>This project will be designed using the IBM Rational CASE tools. This design will be implemented using the Java Programming language using the Android Studio Integrated Development Environment.</p>

### B.1.6

Economic and National Outcomes
<p>This is a not-for-profit and an open source project which has a good probability of increasing the performance of EMU Students by assisting them in various fields such as time management, organization and productivity.</p>

## B.2 Reason of Starting the Project, Methods and R&D Stages

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### B.2.1

#### 1- Explain the reason of starting this project. (Max 500 characters)

These days, people are becoming more and more dependent on devices such as smartphones to organize their lives. There are around 1.2 Billion smartphones around the world. In the US for example, 25% of the population access the internet primarily from their smartphones. These are big figures so our team decided to start a mobile application development strategy to maintain a competitive edge over other educational applications and organizations. It is very important for business organizations to have a responsive website and a mobile application but many businesses have not yet implemented this strategy. For example, in 2014, 45% of all US business organizations did not have a responsive website or a mobile application. We also started this project because students would always want to find what they need quickly. Also, students would always want to stay up to date with all the news that are important to them and get notified immediately. Furthermore, students and other customers almost spend more time using an easy to access app other than a website or a desktop application. Looking at Google's Play Store, there are not many educational applications like EMU Student Kit and it is feasible and makes sense to develop a project like this.

#### 2- Explain the purpose of this project.

The EMU Student Kit is a complex project and it can have a lot of useful features for students. Some proposed functionalities of the application are as follows:

##### 1. Lectures Schedule and time-table:

- Input Utility.
- Auto-extraction of data such as the courses, exams, instructors time tables from the portal xml page.
- University Calendar events ('exams – Holidays – Other Activities').
- Notifications and Reminders for upcoming lectures, events, exams, etc.

##### 2. Map:

- Campus interactive map.
- Includes campus facilities ('Departments – Stadiums – Activity Centers').
- Shows the classrooms and other areas of interest on the map.
- Classrooms search on the map.
- Up to date Bus Schedules.

##### 3. Security, Reliability and other features:

- Encrypted app with PIN/Password based system.
- May include cloud backup using existing services ex. ('Google Drive- Drive One').
- GPA & CGPA Calculator
- News of university/department with notifications.
- Recording, photo and note taking during a lecture.

##### 4. Help Functionality (Documentation).

### 3- Explain

- **output of project**
- **national / international standards if exist**
- **the specific objectives of the project**
- **success criteria**

The expected output of the project is a well-designed and mobile application product known as EMU Student Kit. The specific outputs of this mobile app are as described in section B.2.1. of this proposal. Also, documentations in the form of a Software Requirements Document (SRS) and a Software Design Description (SDD), and a final report are expected outputs of this project. The specific objectives of this project are to assist students and improve their performance in many areas such as productivity and organization and to provide them with many useful functionalities that are beneficiary for students. Some standards that are followed in this project are TUBITAK organization for the project proposal form, IEEE 1016-1998 and 830-1998 standards for the Software Design Descriptions document and the Software Requirements Specifications document. Also, we will implement Google's Java coding style to develop our application. The ISO 9126-4 standard shall ensure that the user is satisfied with the product.

Success Criteria are metrics to determine if the project is successful. Some of them are:

- a. Total Downloads: It is expected that at least 80% of EMU students will download the app. But this app can also be used by other students.
- b. Monthly Average Users (MAU: The application should have a high number of Average users among those who downloaded the application. If it appears that the MAU is growing, then the project is growing in the right path.
- c. Engagement: Also, those users should have a high engagement ratio, i.e., users visit it frequently and use it for a considerable amount of time. Engagement can be measured by metrics such as session length (time period between app open and close), session interval (time between the user's first session and their next one) and retention rate (users who return to your app based on the date of their first visit).
- d. Documentation: The number of users submitting questions or help requests should be less due to well documentation and user guide.

#### 4- Explain

- **the methods to be applied during R&D activities**
- **applications**
- **technics and tools to be used**
- **standards to be followed under the workflow**

In this project, we will be applying an evolutionary development approach. An evolutionary development is based on the idea of developing an initial implementation, exposing it to the customer's comments, refining it through many versions until an adequate system has been developed. This development method is going to be more effective in this project since it is a small-medium sized system. The requirements for this system are not well defined from the beginning and we have to work with the customer and produce prototypes while obtaining feedbacks from the customer. To do this, we are going to have to conduct a number of interviews with the customer and clearly understand the requirements. The waterfall development approach cannot be used in this case since the requirements are not well defined. During the design and UI Design stage of development, we are going to use various CASE Tools such as IBM Rational tools to aid us in developing a clearer picture of how our application is going to look like. Then, we are going to start the development of the application using Google's Android Studio Integrated Development Environment (IDE) and by using Java as the main programming language.

#### 5- Explain

- **the contribution of national/international technological development if exist**
- **starting a new research and development projects within or outside the team**
- **launch new applications or research studies in different technology areas**

**With whom we can cooperate?**

**Expectations:**

**Published work:**

**Can your output be an input for other similar national/international projects?**

The EMU Student Kit is an open source non-profit project. There it can be of a great contribution to other national or international projects. Developers around the world can simply view and study and the design and the code of the program. Since it is also a complex system, it can also be used as a case study for students in many different areas of Software Engineering. This project can also be used as an input for other similarly designed projects since other Software Engineers can use this project as a reference or as a sample when creating other educational applications for students or for specific organizations. The expected publications of this project are the Android EMU Student Kit Application along with its different documentations such as a Requirements Document, a Design Document, and a User Guide.

## B.3 Innovative and Unique Aspects

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### B.3.1

#### 1- Describe

- differences
- advantages
- superiority

**compared to other similar projects.**

EMU Student Kit is a complex application and it contains many different functions and features. In many different educational applications on the Play Store, the application will usually have just a single function or a few functions. To design our application, we will take some ideas from some of those other applications. Some examples are the applications known as “My Study Life”, “Schoolhub Students”, “School Assistant”, etc. The common features between these applications are the time table, tasks, exams, assignments, features. Since the EMU Student Kit is designed primarily for EMU students, it will expand on some of those functionalities and include features such as an interactive map for EMU students (includes classrooms, departments, other areas of interest, etc.), up to date bus schedules, automatic extraction of student’s time tables and exam schedules, notifications and reminders for upcoming lectures, events, exams, etc., GPA and CGPA calculator, recording, photo and note taking during a lecture, password encryption security feature, a cloud backup service, and a proper user guide.

### B.4.1

#### 2- What will be roles/responsibilities for each team member?

##### **Project Manager/System Architect/Programmer**

- Talal Mahdy

##### **Lead Programmer/Database Developer/Administrator**

- Mohamed M. M. Balto

##### **Software Tester/Documenter/Designer**

- Abdoulgwad Hussien Elsheredi

##### **Requirements Engineer/User Interface Designer**

- Adham Moshasha



## C.1 Gantt Chart and Work Packages

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### C.1.1 Gantt Chart (attached at the end of this document)

### C.1.2 List of Work Packages

<b>Work Package No</b>	1
<b>Work Package Name</b>	<b>Feasibility and Pre-Research (SRS stage)</b>
<b>Start-End Date and Time</b>	Start: 20-02-17      Finish: 09/03/17
<b>Related Organizations</b>	

<b>1- List the activities of work packages.</b>
<b>1. Scope.</b> <b>2. Analysis/Software Requirements.</b>
<b>2- Describe the methods and parameters that will be used for work package.</b>
None.
<b>3- List the experiments, tests and analysis in the work package.</b>
<b>1. Scope:</b> 1.1. Determine project scope 1.2. Secure project approval 1.3. Define preliminary resources 1.4. Secure core resources 1.5. Scope complete <b>2. Analysis/Software Requirements:</b> 2.1. Conduct needs analysis 2.2. Draft preliminary software specifications 2.3. Develop preliminary budget 2.4. Review software specifications/budget with team 2.5. Incorporate feedback on software specifications 2.6. Develop delivery timeline 2.7. Obtain approvals to proceed (concept, timeline, budget) 2.8. Secure required resources 2.9. Analysis complete
<b>4- List the output of work package and its success criteria.</b>
<b>Outputs:</b> Initial Requirements Specification Document (SRS), feasibility analysis, secured resources. <b>Success Criteria:</b> Project approved, project is feasible to implement, initial requirements are well documented, resources and team members are secured.
<b>5- Explain the relation of output with other work packages</b>
This is the initial phase of development and is the basic input for all other work packages. It defines the following: What is the project? Who are the stakeholders? Who will use the system? How should it be developed? Who are the team members? What are the basic requirements? How should it be developed? How should it be delivered?...

### C.1.3 List of Work Packages

Work Package No	2
Work Package Name	System Design (SDS Stage)
Start-End Date and Time	Start: 09-03-17      Finish: 31/03/17
Related Organizations	

<b>1- List the activities of work packages.</b>
<ol style="list-style-type: none"> <li>1. EMU Student Kit Software Design</li> <li>2. Development of first prototype</li> <li>3. Improve SRS Document</li> </ol>
<b>2- Describe the methods and parameters that will be used for work package.</b>
Unknown at this point.
<b>3- List the experiments, tests and analysis in the work package.</b>
Review preliminary software specifications Develop functional specifications Design of System Develop prototype based on functional specifications Review functional specifications and Design Incorporate feedback into functional specifications Obtain approval to proceed Design complete
<b>4- List the output of work package and its success criteria.</b>
<b>Outputs:</b> A Software Design Specification (SDS) Document, First Prototype of Software. <b>Success Criteria:</b> An improvement of the SRS Document as a result of better understanding of requirements from first prototype, completion of system design.
<b>5- Explain the relation of output with other work packages</b>
The design stage is the next stage in the software development life cycle. Without designing the software and knowing what has to be done, it will be very difficult for the programmer to develop the software and many mistakes will be done. So this work package is a very important prerequisite to the next stage which is the development stage.

### C.1.4 List of Work Packages

<b>Work Package No</b>	3
<b>Work Package Name</b>	<b>Software Development Stage</b>
<b>Start-End Date and Time</b>	Start: 01-04-17      Finish: 23/04/17
<b>Related Organizations</b>	

<b>1- List the activities of work packages.</b>
The main coding, primary debugging of the program and development of the database.
<b>2- Describe the methods and parameters that will be used for work package.</b>
Unknown at this point.
<b>3- List the experiments, tests and analysis in the work package.</b>
Review functional specifications Identify modular/tiered design parameters Assign development staff Develop Code and Database Developer testing (primary debugging) Development complete
<b>4- List the output of work package and its success criteria.</b>
<b>Outputs:</b> EMU Student Kit Android Application Package (APK) <b>Success Criteria:</b> A successful working APK file of our project.
<b>5- Explain the relation of output with other work packages</b>
During the development of our application, the coders will obviously find some bugs and attempt to fix them. However, there might be some logical or other types of errors that a developer might not notice. Therefore, it is important for the application to be tested by a separate dedicated tester. Testing of the application can begin shortly after the development of the first unit of the application.

### C.1.5 List of Work Packages

<b>Work Package No</b>	4
<b>Work Package Name</b>	<b>Software Testing Stage</b>
<b>Start-End Date and Time</b>	Start: 15-04-17      Finish: 23/05/17
<b>Related Organizations</b>	

<b>1- List the activities of work packages.</b>
<ol style="list-style-type: none"> <li>1. Unit and Integration Test Plans.</li> <li>2. Unit Testing.</li> <li>3. Integration Testing.</li> </ol>
<b>2- Describe the methods and parameters that will be used for work package.</b>
Unknown at this point.
<b>3- List the experiments, tests and analysis in the work package.</b>
<ol style="list-style-type: none"> <li><b>1. Unit and Integration Test Plans:</b> <ol style="list-style-type: none"> <li>1.1. Develop unit test plans using product specifications</li> <li>1.2. Develop integration test plans using product specifications</li> </ol> </li> <li><b>2. Unit Testing:</b> <ol style="list-style-type: none"> <li>2.1. Review modular code</li> <li>2.2. Test component modules to product specifications</li> <li>2.3. Identify anomalies to product specifications</li> <li>2.4. Modify code</li> <li>2.5. Re-test modified code</li> <li>2.6. Unit testing complete</li> </ol> </li> <li><b>3. Integration Testing:</b> <ol style="list-style-type: none"> <li>3.1. Test module integration</li> <li>3.2. Identify anomalies to specifications</li> <li>3.3. Modify code</li> <li>3.4. Re-test modified code</li> <li>3.5. Integration testing complete</li> </ol> </li> </ol>
<b>4- List the output of work package and its success criteria.</b>
<p><b>Outputs:</b> Test data, verification results</p> <p><b>Success Criteria:</b> Testing successfully completed with all the errors and bugs successfully fixed.</p>
<b>5- Explain the relation of output with other work packages</b>
<p>After successfully testing the system, next stages in the software life cycle are the delivery and maintenance stages. The software should be delivered and installed as per the request of the customer. Also, the maintenance stage is very important as a software may serve for many years to come and it will obviously need to be updated. Therefore, a good maintenance team along with good documentation are very important for the product to be successful.</p>

### C.1.6 List of Work Packages

<b>Work Package No</b>	5
<b>Work Package Name</b>	<b>Documentation and Delivery</b>
<b>Start-End Date and Time</b>	Start: 09-03-17      Finish: 03/06/17
<b>Related Organizations</b>	

#### 1- List the activities of work packages.

1. Documentation
2. Pilot
3. Deployment
4. Post Implementation Review

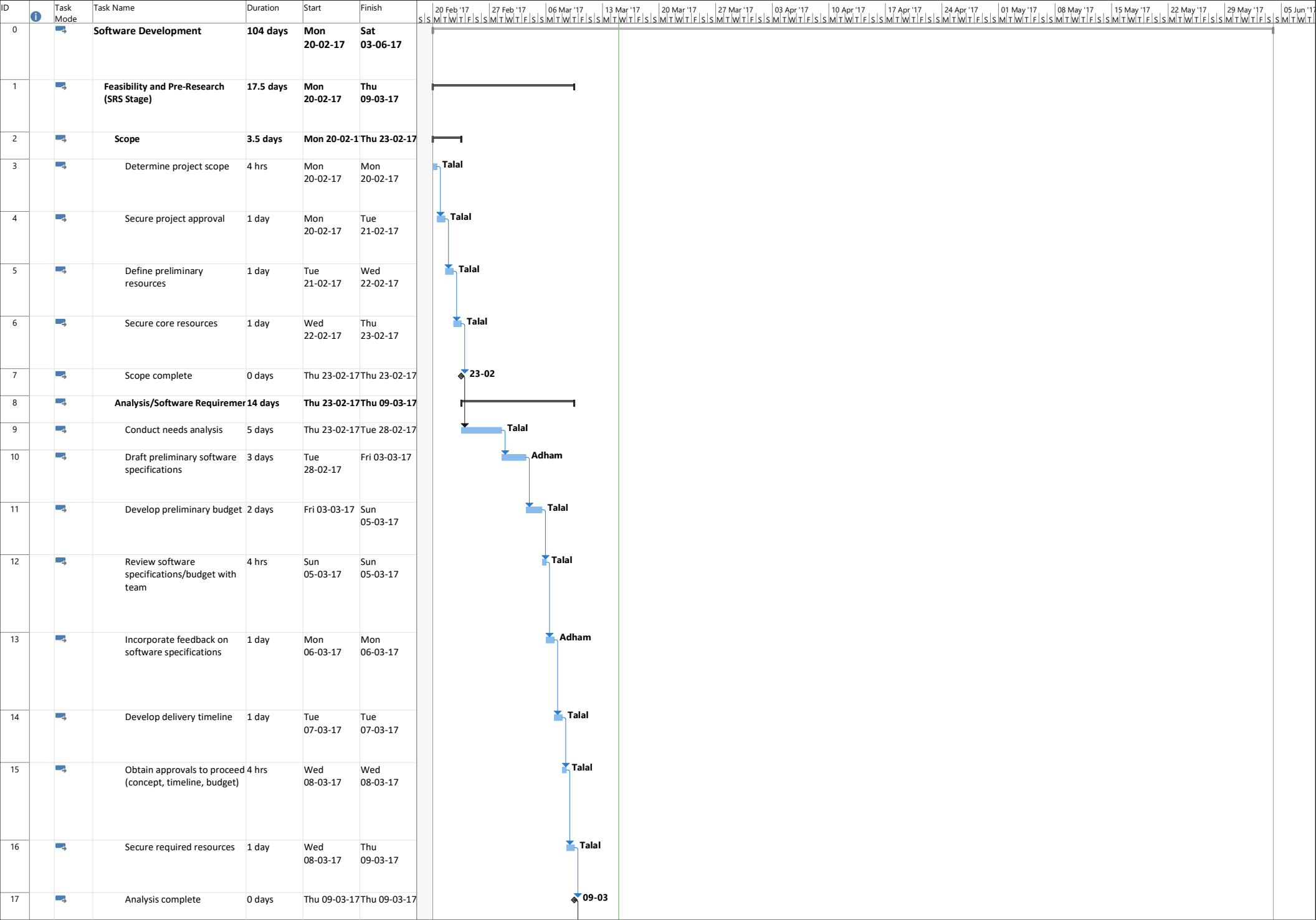
#### 2- Describe the methods and parameters that will be used for work package.

None.

#### 3- List the experiments, tests and analysis in the work package.

1. Documentation
  - 1.1. Develop Help specification
  - 1.2. Develop SRS Document
  - 1.3. Develop SDS Document
  - 1.4. Develop Help system
  - 1.5. Review Help documentation
  - 1.6. Incorporate Help documentation feedback
  - 1.7. Develop user manuals specifications
  - 1.8. Develop user manuals
  - 1.9. Review all user documentation
  - 1.10. Incorporate user documentation feedback
  - 1.11. Documentation complete
2. Pilot
  - 2.1. Identify test group
  - 2.2. Develop software delivery mechanism
  - 2.3. Install/deploy software to Google's Play Store
  - 2.4. Obtain user feedback
  - 2.5. Evaluate testing information
  - 2.6. Pilot complete
3. Deployment
  - 3.1. Determine final deployment strategy
  - 3.2. Develop deployment methodology
  - 3.3. Secure deployment resources
  - 3.4. Train support staff
  - 3.5. Deploy software
  - 3.6. Deployment complete
4. Post Implementation Review
  - 4.1. Document lessons learned
  - 4.2. Distribute to team members
  - 4.3. Create software maintenance team
  - 4.4. Post implementation review complete

<b>4- List the output of work package and its success criteria.</b>
<b>Outputs:</b> Successful delivery of project, uploading to Play Store, completed documentation <b>Success Criteria:</b> A completed well documented, well perceived software application.
<b>5- Explain the relation of output with other work packages</b>
As can be noticed, the documentation stage started at an early time in the software process, sometime after the design stage started. It is important to document all requirements and design aspects of the project along with a proper user guide before delivering the application.



Project: Software Development  
Date: Wed 15-03-17

Task

Split

Milestone

Summary

Project Summary

Inactive Task

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

External Tasks

External Milestone

Deadline

Progress

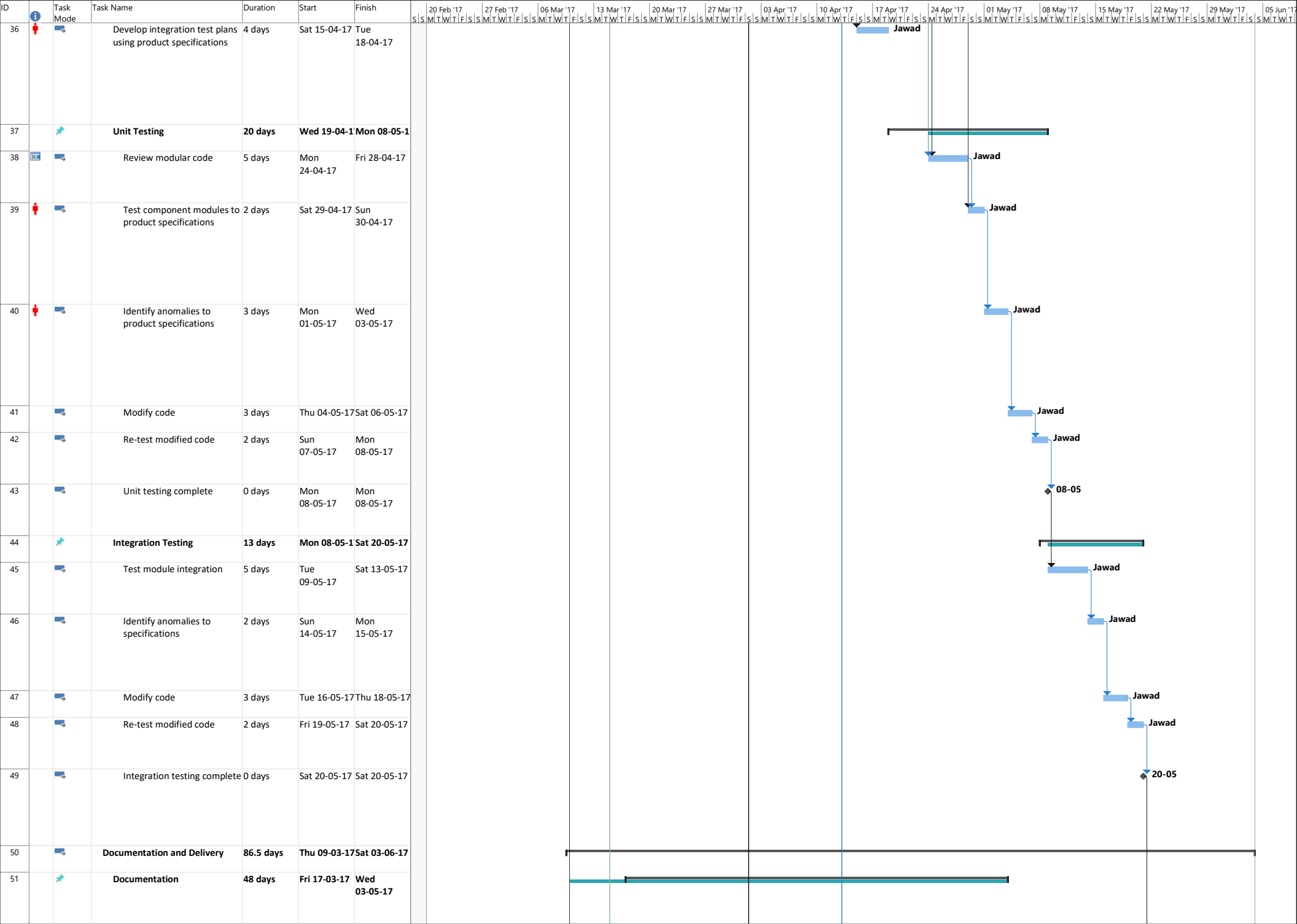
Manual Progress

Page 1

Project: Software Development  
 Date: Wed 15-03-17

Task		Summary		Inactive Milestone		Duration-only		Start-only		External Milestone		Manual Progress	
Split		Project Summary		Inactive Summary		Manual Summary Rollup		Finish-only		Deadline			
Milestone		Inactive Task		Manual Task		Manual Summary		External Tasks		Progress			







Project: Software Development  
Date: Wed 15-03-17


Task

Split

Milestone










Summary

Project Summary

Inactive Task










Inactive Milestone

Inactive Summary

Manual Task










Duration-only

Manual Summary Rollup

Manual Summary










Start-only

Finish-only

External Tasks










External Milestone

Deadline

Progress












Manual Progress

Manual Progress

Manual Progress

Project: Software Development  
 Date: Wed 15-03-17

Task		Summary		Inactive Milestone		Duration-only		Start-only		External Milestone		Manual Progress	
Split		Project Summary		Inactive Summary		Manual Summary Rollup		Finish-only		Deadline			
Milestone		Inactive Task		Manual Task		Manual Summary		External Tasks		Progress	