Software Project Management

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Assignment 1

WBS for the Project Plan:

Task Name	WBS
Project 1	**1**
Project Plan	**1.1**
Write Plan	1.1.1
Review Plan	**1.1.2**
Preparation for review	1.1.2.1
Review Meeting	1.1.2.2
Rework	1.1.3
Risk Mitigation and Contingency Plan	**1.2**
Write Plan	1.2.1
Review Plan	**1.2.2**
Preparation for review	1.2.2.1
Review Meeting	1.2.2.2
Rework	1.2.3
Requirement	**1.3**
Write requirements	1.3.1
Write Use Case Model	1.3.2
Review Requirements/ Use Case Model	**1.3.3**
Preparation for review- requirement	1.3.3.1
Preparation for review- Use case	1.3.3.2
Review Meeting - requirement	1.3.3.3
Review Meeting - use case	1.3.3.4
Rework	1.3.4
Analysis	**1.4**
Write Analysis Document	1.4.1
Review Analysis Document	**1.4.2**
Preparation for Analysis Document	1.4.2.1
Review Meeting	1.4.2.2
Rework	1.4.3
Design	**1.5**
Write DD	1.5.1
Review DD	**1.5.2**
Preparation for DD	1.5.2.1
Review Meeting	1.5.2.2
Rework	1.5.3
Write Data Model (DM)	1.5.4
Review DM	**1.5.5**
Preparation for DM	1.5.5.1

Review Meeting	1.5.5.2
Rework	1.5.6
Coding and unit test	**1.6**
Write Code	1.6.1
Unit Testing	**1.6.2**
Prepare/Execute Test Cases	1.6.2.1
Fix Found Defects	1.6.2.2
Test Found Defects	1.6.2.3
Code Inspection	**1.6.3**
Preparation for Code Inspection	1.6.3.1
Code Inspection Meeting	1.6.3.2
Rework	1.6.3.3
Testing	**1.7**
Write test plan (TP)	1.7.1
Review TP	**1.7.2**
Preparation for TP	1.7.2.1
Review TP Meeting	1.7.2.2
Rework	1.7.2.3
Execute TP (test cases)	1.7.3
Fix Found Defects	1.7.4
Test Fixed Defects	1.7.5
Documentation	**1.8**
User Documentation	1.8.1
Review UD	**1.8.2**
Preparation for UD Review	1.8.2.1
Review UD Meeting	1.8.2.2
Rework	1.8.2.3

Calculation for effort for 100% utilization of resources:

1. Project Plan:

There are 8 working hours/person.

1. Write Plan: 1 manager

Ans: Amount of Work = 52 pages

Productivity Rate = 2 pages/hour = 2 * 8 = 16 pages/day

Effort = Amount of Work/Productivity Rate = 52/16 = 3.25 days

2. Preparation for Review:5 engineers from 5 technical fields except author

Ans: Amount of Work = 52 pages

Productivity Rate = 5 pages/hour = 5 * 8 = 40 pages/day

Effort = Amount of Work/Productivity Rate = 52/40 = 1.3 days

3. Review Meeting: manager+ any 4 above engineers

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Ans: Amount of Work = 52 pages
Productivity Rate = 10 pages/hour = 10* 8 = 80 pages/day
Effort = Amount of Work/Productivity Rate = 52/80 = 0.65 days

4. Rework: manager
Ans: Amount of Work = 19 defects
Productivity Rate = 10 defects/hour = 10* 8 = 80 defects/day
Effort = Amount of Work/Productivity Rate = 19/80 = 0.23 days

2.Risk Mitigation and Contingency Plan

1.Write plan: manager will do it.
Ans: Amount of Work = 31 pages
Productivity Rate = 2 pages/hour = 2* 8 = 16 pages/day
Effort = Amount of Work/Productivity Rate = 31/16 = 1.93 days

2. Preparation for review:
Ans: Amount of Work = 31 pages
Productivity Rate = 5 pages/hour = 5* 8 = 40 pages/day
Effort = Amount of Work/Productivity Rate = 31/40 = 0.77 days
3. Review Meeting:
Ans: Amount of Work = 31 pages
Productivity Rate = 10 pages/hour = 10* 8 = 80 pages/day
Effort = Amount of Work/Productivity Rate = 31/80 = 0.38 days

4.Rework:
Ans: Amount of Work = 41 defects
Productivity Rate = 5 defects/hour = 5 * 8 = 40 defects /day
Effort = Amount of Work/Productivity Rate = 41/40 = 1.02 days

3. Requirement:

There are 8 working hours/person
1. Write Requirements: 2 Req engineers
Ans: Amount of Work = 117 Req
Productivity Rate = 2 Req/hour = 2 * 8 = 16 Req/day
Effort = Amount of Work/Productivity Rate = 117/16 = 7.31 days/1hct

2. Write Use Case Model:
Ans: Amount of Work = 79 Use Cases
Productivity Rate = 1 Use Case/2 hours = 4 Use Cases/day
Effort = Amount of Work/Productivity Rate = 79/4 = 19.75 days

3. Preparation for Review – Requirements:
Ans: Amount of Work = 117 Req

Productivity Rate = 25 Req/hour = 25 * 8 = 200 Req/day
Effort = Amount of Work/Productivity Rate = 117/200 = 0.58 days

4. Preparation for Review – Use Case Model:
Ans: Amount of Work = 79 Use Cases
Productivity Rate = 5 Use Cases/hour = 5 * 8 = 40 Use Cases/day
Effort = Amount of Work/Productivity Rate = 79/40 = 1.97 days

5. Review Meeting – Requirements:
Ans: Amount of Work = 117 Req
Productivity Rate = 30 Req/hour = 30 * 8 = 240 Req/day
Effort = Amount of Work/Productivity Rate = 117/240 = 0.48 days

6. Review Meeting – Use Case Model:
Ans: Amount of Work = 79 Use Cases
Productivity Rate = 10 Use Cases/hour = 10 * 8 = 80 Use Cases/day
Effort = Amount of Work/Productivity Rate = 79/80 = 0.98 days

Review Requirements/ Use Case Model=
Total Duration=0.58 days+1.97days+0.48days+0.98 days
=4.01 days/ for all engineers involved

7. Rework:
Ans: Amount of Work = 113 defects
Productivity Rate = 5 Use Cases/hour = 5 * 8 = 40 Use Cases/day
Effort = Amount of Work/Productivity Rate = 113/40 = 2.82 days

3. Analysis
1. Write Analysis Document: 2 system engineers
Ans: Amount of Work = 141 pages
Productivity Rate = 5 pages/hour = 5 * 8 = 40 pages/day
Effort = Amount of Work/Productivity Rate = 141/40 = 3.52 days

2. Preparation for Analysis Document:
Ans: Amount of Work = 141 pages
Productivity Rate = 5 pages/hour = 5 * 8 = 40 pages/day
Effort = Amount of Work/Productivity Rate = 141/40 = 3.52 days

3. Review Meeting:
Ans: Amount of Work = 141 pages
Productivity Rate = 10 pages/hour = 10 * 8 = 80 pages/day
Effort = Amount of Work/Productivity Rate = 141/80 = 1.76 days

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4. Rework:
Ans: Amount of Work = 47 defects
Productivity Rate = 5 defects/hour = 5 * 8 = 40 defects/day
Effort = Amount of Work/Productivity Rate = 47/40 = 1.17 days

4. Design:
1. Write DD: 2 system engineers
Ans: Amount of Work = 189 pages
Productivity Rate = 3 pages/hour = 3 * 8 = 24 pages/day
Effort = Amount of Work/Productivity Rate = 189/24 = 7.87 days

2. Preparation for DD:
Ans: Amount of Work = 189 pages
Productivity Rate = 5 pages/hour = 5 * 8 = 40 pages/day
Effort = Amount of Work/Productivity Rate = 189/40 = 4.72 days

3. Review Meeting:
Ans: Amount of Work = 189 pages
Productivity Rate = 8 pages/hour = 8 * 8 = 64 pages/day
Effort = Amount of Work/Productivity Rate = 189/64 = 2.95 days

4. Rework:
Ans: Amount of Work = 134 defects
Productivity Rate = 5 defects/hour = 5 * 8 = 40 pages/day
Effort = Amount of Work/Productivity Rate = 134/40 = 3.35 days

5. Write Data Model(DM): 2 system engineers
Ans: Amount of Work = 36 pages
Productivity Rate = 1 page/5 hour = 8/5 = 1.6 pages/day
Effort = Amount of Work/Productivity Rate = 36/1.6 = 22.5 days

6. Preparation for DM:
Ans: Amount of Work = 36 pages
Productivity Rate = 3 pages/hour = 3 * 8 = 24 pages/day
Effort = Amount of Work/Productivity Rate = 36/24 = 1.5 days

7. Review Meeting:
Ans: Amount of Work = 36 pages
Productivity Rate = 5 pages/hour = 5 * 8 = 40 pages/day
Effort = Amount of Work/Productivity Rate = 36/40 = 0.9 days

8. Rework:
Ans: Amount of Work = 56 defects
Productivity Rate = 5 defects/hour = 5 * 8 = 40 defects/day

Effort = Amount of Work/Productivity Rate = 56/40 = 1.4 days

5. Coding and Unit Test:

1. Write Code: 4 programmers

Ans: Amount of Work = 5100 SLOC

Productivity Rate = 5 SLOC/hour = 5 * 8 = 40 SLOC/day

Effort = Amount of Work/Productivity Rate = 5100/40 = 127.5 days

2. Prepare/Execute Test Cases:

Ans: Amount of Work = 324 test cases

Productivity Rate = 10 test cases/day

Effort = Amount of Work/Productivity Rate = 324/10 = 32.4 days

3. Fix Found Defects:

Ans: Amount of Work = 210 Defects

Productivity Rate = 8 defects/day

Effort = Amount of Work/Productivity Rate = 210/8 = 26.25 days

4. Test Fixed Defects:

Ans: Amount of Work = 210 Defects

Productivity Rate = 10 defects/day

Effort = Amount of Work/Productivity Rate = 210/10 = 21 days

5. Preparation for Code Inspection:

Ans: Amount of Work = 5100 SLOC

Productivity Rate = 150 SLOC/hour = 150 * 8 = 1200 SLOC/day

Effort = Amount of Work/Productivity Rate = 5100/1200 = 4.25 days

6. Code Inspection Meeting:

Ans: Amount of Work = 5100 SLOC

Productivity Rate = 200 SLOC/hour = 200 * 8 = 1600 SLOC/day

Effort = Amount of Work/Productivity Rate = 5100/1600 = 3.18 days

7. Rework:

Ans: Amount of Work = 167 defects

Productivity Rate = 5 defects/hour = 5 * 8 = 40 defects/day

Effort = Amount of Work/Productivity Rate =167/40 = 4.17 days

6. Testing:

1. Write test plan (TP):3 test engineers

Ans: Amount of Work = 204 pages

Productivity Rate = 5 pages/day

Effort = Amount of Work/Productivity Rate = 204/5 = 40.8 days

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2. Preparation for TP:
Ans: Amount of Work = 204 pages
Productivity Rate = 5 pages/hour = 5 * 8 = 40 pages/day
Effort = Amount of Work/Productivity Rate = 204/40 = 5.1 days

3. Review TP Meeting:
Ans: Amount of Work = 204 pages
Productivity Rate = 10 pages/hour = 10 * 8 = 80 pages/day
Effort = Amount of Work/Productivity Rate = 204/80 = 2.55 days

4. Rework:
Ans: Amount of Work = 177 defects
Productivity Rate = 5 defects/hour = 5 * 8 = 40 defects/day
Effort = Amount of Work/Productivity Rate = 177/40 = 4.42 days

5. Execute TP(test cases):
Ans: Amount of Work = 258 test cases
Productivity Rate = 10 test cases/day
Effort = Amount of Work/Productivity Rate = 258/10 = 25.8 days

6. Fix Found defects: 4 programmers
Ans: Amount of Work = 188 defects
Productivity Rate = 5 defects/day
Effort = Amount of Work/Productivity Rate = 188/5 = 37.6 days

7. Test Fixed Defects:
Ans: Amount of Work = 188 defects
Productivity Rate = 10 defects/day
Effort = Amount of Work/Productivity Rate = 188/10 = 18.8 days

7. Documentation:
1. User Documentation: 3 doc engineers
Ans: Amount of Work = 167 pages
Productivity Rate = 3 pages/hour = 3 * 8 pages/day = 24 pages/day
Effort = Amount of Work/Productivity Rate = 167/24 = 6.95 days

2. Preparation for UD Review:
Ans: Amount of Work = 167 pages
Productivity Rate = 5 pages/hour = 5 * 8 pages/day = 40 pages/day
Effort = Amount of Work/Productivity Rate = 167/40 = 4.17 days

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3. Review UD Meeting:

Ans: Amount of Work = 167 pages

Productivity Rate = 10 pages/hour = 10 * 8 pages/day = 80 pages/day

Effort = Amount of Work/Productivity Rate = 167/80 = 2.08 days

4. Rework:

Ans: Amount of Work = 182 defects

Productivity Rate = 10 defects/hour = 10 * 8 defects/day = 80 defects/day

Effort = Amount of Work/Productivity Rate = 182/80 = 2.27 days

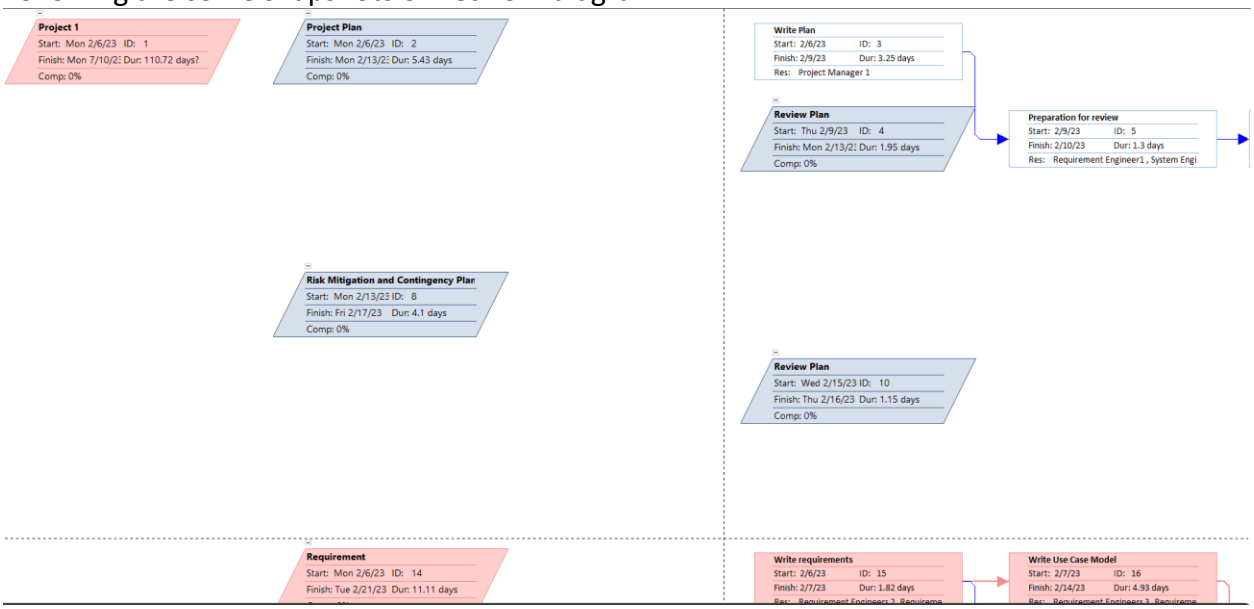
Following are the assumptions for the Project Plan and Resources Assigned:

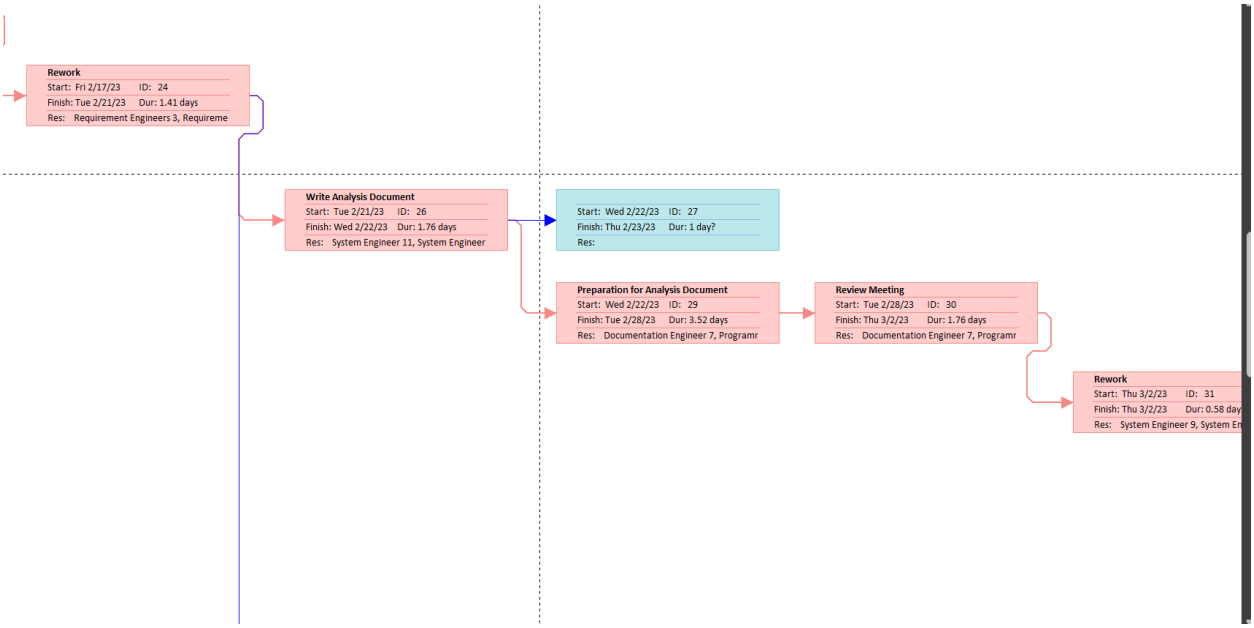
1. A day constitutes of 8 business hours for each resource.
2. The Use Case Model are written by Requirement Engineers itself.
3. Duration (in hours) is calculated using (Amount of Work) / (Productivity Rate * Head
4. Count).
5. Inspection of code is done by peer programmer (other than author of code) considering their expertise will be helpful.

4. What is the earliest finish date for this project if it is scheduled to start on 2/6/23?

Answer: If we consider 100% utilization of resources then earliest finish date of the project will be 7/10/23- Monday.

Following are some snapshots of network diagram:





5. If you are not allowed to use more than 20% of the resources available at any point of time for this project, what is the earliest finish date for this project if it is scheduled to start on 2/6/23?

Answer: If we consider 20% utilization of resources then earliest finish date of the project will be Wed-12/20/23.

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