

SPM Assignment -2

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6. What is the earliest finish date for this project if it is scheduled to start on 2/12/24?

The earliest finish date with 100% usage of resources distributed equally is **11/21/24**.

7. Is it feasible to complete this project (Assignment#2 project) 3 weeks after the completion date you identified for the project in Assignment#1? Explain

No, it is not feasible to complete Project2_Sharer three weeks after the completion date of Project1_Resource pool. The completion date for Project1 is August 5, 2024, and completing Project2 by August 26, 2024, would require compressing a schedule originally set to end on November 21, 2024. This acceleration would demand significant changes to resource allocation, project scope, and timelines that are unlikely to be achievable without compromising the project's quality or objectives.

9. Submit your Comments regarding the start and completion dates and resources assignments for the two projects.

Comments:

- The start and completion dates for the two projects, along with resource assignments, indicate tightly scheduled timelines with significant overlap in tasks and potentially shared resources.
- Project1_Resource pool runs from January 29, 2024, to August 5, 2024, while Project2_Sharer starts on February 12, 2024, and is set to complete on November 21, 2024.
- This overlap suggests that resources might be stretched across both projects simultaneously, requiring careful management to avoid conflicts and ensure both projects stay on track. The detailed assignments of tasks to specific roles, such as Project Managers, Documentation Engineers, Programmers/Software Engineers, and Test Engineers, reflect a structured approach to both projects.
- However, the success of this approach hinges on effective resource allocation, management of dependencies between tasks, and the ability to handle potential bottlenecks or resource shortages without impacting the timelines or quality of the projects.

Calculations:

Formula:

We know that: $\text{Effort} = \text{Amount of work} / \text{Productivity rate}$

$\text{Duration} = \text{Effort} / \text{No. of Resources}$

Let's take Given Amount of work as "W", Productivity rate as "P"

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Calculations:

Project plan: 13 days

1. **Write Plan:** W= 120 pages, P= 5 pages/Hour
Effort = $120/5 = 24\text{hrs} = 3\text{dys}/1\text{HCT}$
Duration= $3/1 = 3$ days.
2. **Review Plan:**
 - a. **Preparation for review:** W= 120 pages, P= 3 pages/Hour
Effort = $120/3 = 40\text{ hrs} = 5\text{ dys}/1\text{HCT}$
Duration= $(5\text{days}/1\text{HCT}) * 5 = 5\text{ days}/5\text{HCT}$.
 - b. **Review Meeting:** W= 120 pages, P= 10 pages/Hour
Effort = $120/10 = 12\text{hrs} = 2\text{dys}/1\text{HCT}$
Duration= $(2\text{days}/1\text{HCT}) * 6 = 2\text{days}$.
3. **Rework:** W= 156 defects, P= 7 defects/Hour
Effort = $156/7 = \text{Roundoff}(22.2) = 23\text{hrs} = 3\text{dys}/1\text{HCT}$
Duration= $3/1 = 3$ days.

Requirement: 26 days

1. **Write requirements:** W= 410 Req, P= 4 Req/Hour
Effort = $410/4 = \text{Roundoff}(102.5) = 103\text{hrs} = 13\text{dys}/1\text{HCT}$
Duration= $13/4 = 4$ days.
2. **Review Requirements:**
 - a. **Preparation for review:** W= 410 Req, P= 5 Req/Hour
Effort = $410/5 = 82\text{hrs} = 11\text{dys}/1\text{HCT}$
Duration= $(11\text{dys}/1\text{HCT}) * 4 = 11\text{ days}/4\text{HCT}$.
 - b. **Review Meeting:** W= 410 Req, P= 8 Req/Hour
Effort = $410/8 = \text{roundoff}(51.25) = 52\text{hrs} = 7\text{dys}/1\text{HCT}$
Duration= $(7\text{dys}/1\text{HCT}) * 5 = 7\text{ days}/5\text{HCT}$.
3. **Rework:** W= 378 defects, P= 4 defects/Hour
Effort = $378/4 = \text{Roundoff}(94.5) = 95\text{hrs} = 12\text{dys}/1\text{HCT}$
Duration= $12/3 = 4$ days.

Lab and Environment Setup: 18 days

1. **Hardware:**
 - i. **Install Network Elements:**
 - a. **Routers:** W= 10, P= 3 Routers/day
Effort = $(10/(3/8)) = 27\text{hrs} = 4\text{dys}/1\text{HCT}$
Duration= $4/2 = 2$ days.
 - b. **Bridge:** W= 30, P= 2 Bridges/day
Effort = $(30/(2/8)) = 120\text{hrs} = 15\text{dys}/1\text{HCT}$
Duration= $15/3 = 5$ days.
 - ii. **Install Server:** W= 26 servers, P= 3 servers/day

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$$\text{Effort} = (26/(3/8)) = 70\text{hrs} = 9\text{dys}/1\text{HCT}$$

$$\text{Duration} = 9/4 = 3 \text{ days.}$$

- iii. **Install Clients:** W= 90 clients, P= 10 clients/day

$$\text{Effort} = (90/(10/8)) = 72\text{hrs} = 9\text{dys}/1\text{HCT}$$

$$\text{Duration} = 9/4 = 3 \text{ days.}$$

2. Software:

- i. **Install Development Tools:** W= 21 tools, P= 5 tools/day

$$\text{Effort} = (21/(5/8)) = 34\text{hrs} = 5\text{dys}/1\text{HCT}$$

$$\text{Duration} = 5/2 = 3 \text{ days.}$$

- ii. **Install Testing Tools:** W= 21 tools, P= 8 tools/day

$$\text{Effort} = (21/(8/8)) = 21\text{hrs} = 3\text{dys}/1\text{HCT}$$

$$\text{Duration} = 3/2 = 2 \text{ days.}$$

Analysis/Design Document: 27 days

1. **Write DD:** W= 403 pages, P= 4 pages/Hour

$$\text{Effort} = 403/4 = 101\text{hrs} = 13\text{dys}/1\text{HCT}$$

$$\text{Duration} = 13/4 = 4 \text{ days.}$$

2. Review DD:

- a. **Preparation for DD:** W= 403 pages, P= 4 pages/Hour.

$$\text{Effort} = 403/4 = 101\text{hrs} = 13\text{dys}/1\text{HCT}$$

$$\text{Duration} = (13\text{dys}/1\text{HCT}) * 4 = 13 \text{ days}/4\text{HCT.}$$

- b. **Review Meeting:** W= 403 pages, P= 8pages /Hour.

$$\text{Effort} = 403/8 = 51\text{hrs} = 7\text{dys}/1\text{HCT}$$

$$\text{Duration} = (7\text{dys}/1\text{HCT}) * 5 = 7 \text{ days}/5\text{HCT.}$$

3. **Rework:** W= 343 defects, P= 5 defects/Hour.

$$\text{Effort} = 343/5 = 69\text{hrs} = 9\text{dys}/1\text{HCT}$$

$$\text{Duration} = 9/3 = 3 \text{ days.}$$

Data Model: 10 days

1. **Create Data Model(DM):** W= 48 pages, P= 1 pages/Hour.

$$\text{Effort} = 48/1 = 48\text{hrs} = 6\text{dys}/1\text{HCT}$$

$$\text{Duration} = 6/2 = 3 \text{ days.}$$

2. Review Data Model:

- a. **Preparation for DM:** W= 48 pages, P= 4 pages/Hour

$$\text{Effort} = 48/4 = 12\text{hrs} = 2\text{dys}/1\text{HCT}$$

$$\text{Duration} = (2\text{dys}/1\text{HCT}) * 4 = 2 \text{ days}/4\text{HCT.}$$

- b. **Review Meeting:** W= 48 pages, P= 10 pages/Hour

$$\text{Effort} = 48/10 = \text{roundoff}(4.8) = 5\text{hrs} = 1\text{dys}/1\text{HCT}$$

$$\text{Duration} = (1\text{day}/1\text{HCT}) * 5 = 1 \text{ day}/5\text{HCT.}$$

3. **Rework:** W= 309 defects, P= 5 defects/Hour

$$\text{Effort} = 309/5 = \text{Roundoff}(61.8) = 62\text{hrs} = 8\text{dys}/1\text{HCT}$$

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Duration= $8/2 = 4$ days.

Coding and unit test: 89 days

1. **Write Code:** W= 8420 SLOC, P= 6 SLOC/Hour
Effort = $8420/6 = 1403\text{hrs} = 176\text{dys}/1\text{HCT}$
Duration= $176/6 = 30$ days.
2. **Unit testing:**
 - a. **Prepare/Execute Test cases:** W= 945 test cases,
P= 5 testcases/Hour.
Effort = $945/5 = 189\text{hrs} = 24\text{dys}/1\text{HCT}$
Duration= $24/5 = 5$ days.
 - b. **Fix Found Defects:** W= 783 defects, P=13 defects/Day.
Effort = $(783/(13/8)) = 482\text{hrs} = 61\text{dys}/1\text{HCT}$
Duration= $61/6 = 11$ days.
 - c. **Test fixed defects:** W= 783 defects, P=10 defects/Day.
Effort = $(783/(10/8)) = 627\text{hrs} = 79\text{dys}/1\text{HCT}$
Duration= $79/6 = 14$ day.

3. Code Inspection:

- a. **Preparation for code inspection:** W= 8420 SLOC,
P= 70 SLOC/Hour
Effort = $8420/70 = \text{roundoff}(120.28) = 121\text{hrs} = 16\text{dys}/1\text{HCT}$
Duration= $(16\text{dys}/1\text{HCT}) * 4 = 16$ days/4HCT.
- b. **Code Inspection Meeting:** W= 8420 SLOC,
P= 120 SLOC/Hour
Effort = $8420/120 = 71\text{hrs} = 9\text{dys}/1\text{HCT}$
Duration= $(9\text{dys}/1\text{HCT}) * 5 = 9$ days/5HCT.
- c. **Rework:** W= 935 defects, P= 5 defects/Hour
Effort = $935/5 = 187\text{hrs} = 24\text{dys}/1\text{HCT}$
Duration= $24/6 = 4$ days.

Testing: 144 days

1. **Write Test Plan(TP):** W= 357 pages, P= 8 pages/Day
Effort = $(357/(8/8)) = 357\text{hrs} = 45\text{dys}/1\text{HCT}$
Duration= $45/5 = 9$ days.
2. **Review TP:**
 - a. **Preparation for TP:** W= 357 pages, P= 5 pages/Hours
Effort = $(357/5) = 72\text{hrs} = 9\text{dys}/1\text{HCT}$
Duration= $(9\text{dys}/1\text{HCT}) * 4 = 9$ days/4HCT.
 - b. **Review TP Meeting:** W= 357 pages, P= 10 pages/Hour
Effort = $357/10 = 36\text{hrs} = 5\text{dys}/1\text{HCT}$
Duration= $(5\text{dys}/1\text{HCT}) * 5 = 5\text{days}/5\text{HCT}$.

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- c. **Rework:** $W = 290$ defects, $P = 5$ defects/Hour
Effort = $290/5 = 58\text{hrs} = 8\text{dys}/1\text{HCT}$
Duration = $8/3 = 3$ days.
- 3. **Execute TP(test cases):** $W = 810$ testcases, $P = 8$ test cases/Day
Effort = $(810/(8/8)) = 810\text{hrs} = 102\text{dys}/1\text{HCT}$
Duration = $102/6 = 17$ days.
- 4. **Fix Found Defects:** $W = 306$ defects, $P = 5$ defects/Day
Effort = $(306/(5/8)) = 490\text{hrs} = 62\text{dys}/1\text{HCT}$
Duration = $62/6 = 11$ days.

Documentation: 31 days

- 1. **User Documentation:** $W = 510$ pages, $P = 5$ pages/Hour
Effort = $510/5 = 102\text{hrs} = 13\text{dys}/1\text{HCT}$
Duration = $13/4 = 4$ days.
- 2. **Review UD:**
 - a. **Preparation for UD review meeting:** $W = 510$ pages, $P = 5$ pages/Hour
Effort = $510/5 = 102\text{hrs} = 13\text{dys}/1\text{HCT}$
Duration = $(13\text{dys}/1\text{HCT}) * 4 = 13\text{days}/4\text{HCT}$.
 - b. **Review UD Meeting:** $W = 510$ pages, $P = 7$ pages/Hour
Effort = $510/7 = 73\text{hrs} = 10\text{dys}/1\text{HCT}$
Duration = $(10\text{dys}/1\text{HCT}) * 5 = 10\text{days}/5\text{HCT}$.
 - c. **Rework:** $W = 490$ defects, $P = 5$ defects/Hour
Effort = $490/5 = 98\text{hrs} = 13\text{dys}/1\text{HCT}$
Duration = $13/4 = 4$ days.

Training: 21 days

- 1. **Training Handouts(TH):** $W = 280$ pages, $P = 1$ pages/Hour
Effort = $280/1 = 280\text{hrs} = 35\text{dys}/1\text{HCT}$
Duration = $35/5 = 7$ days.
- 2. **Review Training Handouts(TH):**
 - i. **Preparation for TH review meeting:** $W = 280$ pages,
 $P = 5$ pages/Hour
Effort = $280/5 = 56\text{hrs} = 7\text{dys}/1\text{HCT}$
Duration = $(7\text{dys}/1\text{HCT}) * 4 = 7\text{days}/4\text{HCT}$.
 - ii. **Review TH Meeting:** $W = 280$ pages,
 $P = 10$ pages/Hour
Effort = $280/10 = 28\text{hrs} = 4\text{dys}/1\text{HCT}$
Duration = $(4\text{dys}/1\text{HCT}) * 5 = 4\text{days}/5\text{HCT}$.
 - iii. **Rework:** $W = 632$ defects, $P = 8$ defects/Hour
Effort = $632/8 = 79\text{hrs} = 10\text{dys}/1\text{HCT}$
Duration = $10/4 = 3$ days.