

Phase	Size	Productivity
Project Plan		
Write Plan	150 pages	4 pages/hour
Review Plan		
Preparation for Review		5 pages/hour
Review Meeting		7 pages/hour
Rework	108 defects	5 defects/hour
Documented Software Development Process Updates		
Process Changes	82 changes	4 changes/hour
Review Changes		
Preparation for review		5 changes/hour
Review Meeting		8 changes/hour
Rework	91 defects	5 defects/hour
Requirements		
Write Requirements	210 Req	4 req/hour
Review Requirements		
Preparation for Review		12 req/hour
Review Meeting		18 req/hour
Rework	239 defects	8 defects/hour
Build the development and testing lab environment		
Hardware Environment		
Servers	12 servers	1 server/day
Clients	21 clients	5 clients/day
Software Development Tools		
Build/compile tools	12 tool	1 tool/hour
Software Testing Tools		
Test Cases Execution tools	5 tool	2 tool/day
Simulation tools	8 tool	2 tool/day
Analysis		
Write Analysis Document	172 pages	5 pages/hour
Review Analysis Document		
Preparation for Analysis Document		4 pages/hour
Review Meeting		9 pages/hour
Rework	321 defects	6 defects/hour
Design		
Write DD	220 pages	5 pages/hour
Review DD		
Preparation for DD		5 pages/hour
Review Meeting		8 pages/hour
Rework	472 defects	6 defects/hour
Coding		
Write Code	3800 SLOC	5 SLOC/hour

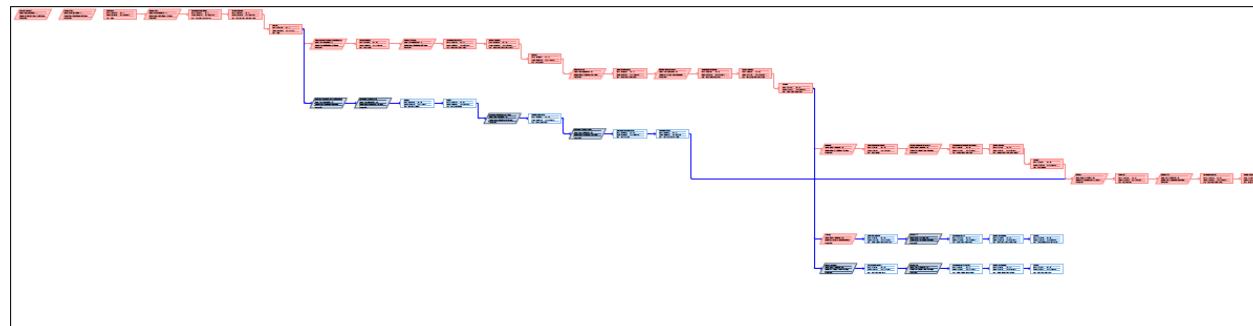
Unit Testing		
Prepare/Execute test cases	331 test cases	25 test cases/day
Fix Found Defects	266 defects	10 defects/day
Test Fixed Defects	266 defects	10 defects/day
Code Inspection		
Prepare for Code Inspection		102 SLOC/hour
Code Inspection Meeting		162 SLOC/hour
Rework	334 defects	5 defects/hour
Testing		
Write test plan(TP)	205 pages	8 pages/day
Review TP		
Preparation for TP		5 pages/hour
Review TP Meeting		10 pages/hour
Rework	101 defects	4 defects/hour
Execute TP(test cases)	194 test cases	8 test cases/day
Fix Found Defects	113 defects	5 defects/day
Test Fixed Defects	113 defects	10 defects/day
Documentation		
User Documentation	177 pages	5 pages/hour
Review UD		
Preparation for UD review		5 pages/hour
Review UD Meeting		7 pages/hour
Rework	236 defects	5 defects/hour

4. Feed the information provided in this handout in MS Project to create the Project Plan and the Network Diagram

The below is the PROJECT PLAN and Network Diagram screenshots:

1	Sample Project3	114.95 days	Mon 10/14/24	Fri 3/21/25		1	Fri 3/21/25
2	Project Plan	8.57 days	Mon 10/14/24	Thu 10/24/24		1.1	Thu 10/24/24
3	Write Plan	4.68 days	Mon 10/14/24	Fri 10/18/24	PM8	1.1.1	Fri 10/18/24
4	Review Plan	1.19 days	Fri 10/18/24	Mon 10/21/24	3	1.1.2	Mon 10/21/24
5	Preparation for Review	0.75 days	Fri 10/18/24	Mon 10/21/24	3	1.1.2.1	Mon 10/21/24
6	Review Meeting	0.45 days	Mon 10/21/24	Mon 10/21/24	5	1.1.2.2	Mon 10/21/24
7	Rework	2.7 days	Mon 10/21/24	Thu 10/24/24	6	1.1.3	Thu 10/24/24
8							
9	Documented Software Development Process Updates	3.18 days	Thu 10/24/24	Tue 10/29/24	7	1.2	Tue 10/29/24
10	Process Changes	1.28 days	Thu 10/24/24	Fri 10/25/24	7	1.2.1	Fri 10/25/24
11	Review Changes	0.77 days	Fri 10/25/24	Mon 10/28/24	10	1.2.2	Mon 10/28/24
12	Preparation for review	0.51 days	Fri 10/25/24	Mon 10/28/24	10	1.2.2.1	Mon 10/28/24
13	Review Meeting	0.26 days	Mon 10/28/24	Mon 10/28/24	12	1.2.2.2	Mon 10/28/24
14	Rework	1.14 days	Mon 10/28/24	Tue 10/29/24	13	1.2.3	Tue 10/29/24
15							
16	Requirements	3.41 days	Tue 10/29/24	Mon 11/4/24	14	1.3	Mon 11/4/24
17	Write Requirements	1.64 days	Tue 10/29/24	Thu 10/31/24	14	1.3.1	Thu 10/31/24
18	Review Requirements	0.84 days	Thu 10/31/24	Fri 11/1/24	17	1.3.2	Fri 11/1/24
19	Preparation for Review	0.55 days	Thu 10/31/24	Thu 10/31/24	17	1.3.2.1	Thu 10/31/24
20	Review Meeting	0.29 days	Thu 10/31/24	Fri 11/1/24	19	1.3.2.2	Fri 11/1/24
21	Rework	0.93 days	Fri 11/1/24	Mon 11/4/24	20	1.3.3	Mon 11/4/24
22							

NETWORK DIAGRAM:



10. Submit your Comments regarding the start and completion dates and resources assignments for the three projects in a PDF document called Analysis.pdf.

- Document and comment on the WBS
- Document and comment on the Network Diagram
- Document and comment on the resource pool utilization
- Document the Baseline Estimation Calculations

Ans) Comments for start dates:

- Assignment#1: start date is Mon 9/16/24
- Assignment#2: start date is Mon 9/23/24
- Assignment#3: start date is Mon 10/14/24

Comments for completion dates:

- Assignment#1: finish date is Tue 12/17/24
- Assignment#2: finish date is Mon 4/14/25
- Assignment#3: finish date is Fri 3/21/25

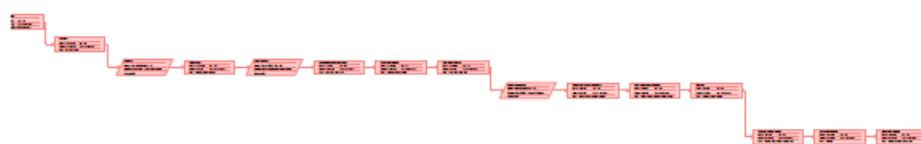
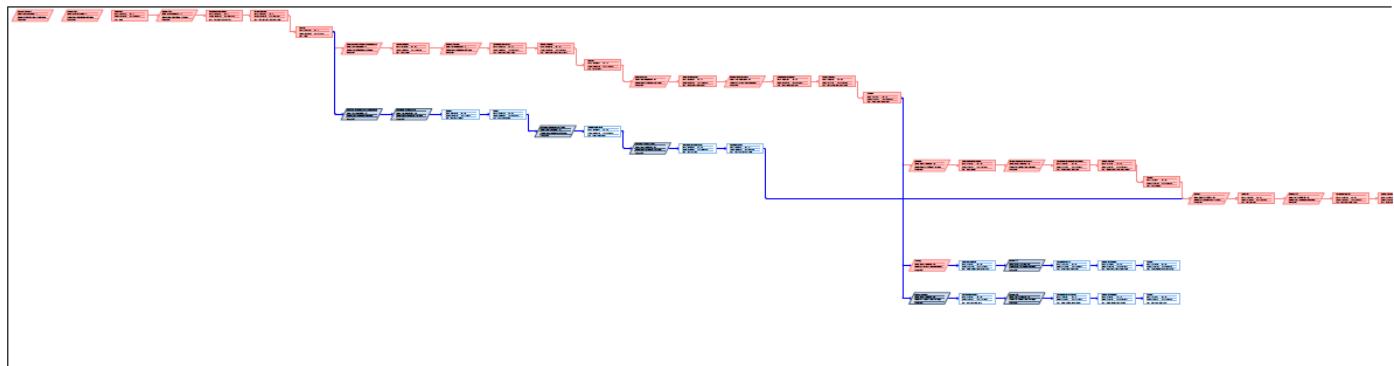
Document and comment on the WBS:

Work Breakdown Structure (WBS) helps in defining and organizing total project scope. It breaks down into smaller and more manageable components. It is useful for Project Clarity (helps teams and stakeholders to clearly understand the entire scope), Task Management (It helps in easily assigning tasks, tracking progress), Resource Allocation (helps in allocating resources), Risk Identification (Allows early identification of potential of potential risks at each level).

	Task Mode	Task Name	Duration	Start	Finish	Predet	Resource Names	WBS	Early Finish	Add New Column
1		Sample Project3	114.95 days	Mon 10/14/24	Fri 3/21/25			1	Fri 3/21/25	
2		Project Plan	8.57 days	Mon 10/14/24	Thu 10/24/24			1.1	Thu 10/24/24	
3		Write Plan	4.68 days	Mon 10/14/24	Fri 10/18/24			1.1.1	Fri 10/18/24	
4		Review Plan	1.19 days	Fri 10/18/24	Mon 10/21/24	3		1.1.2	Mon 10/21/24	
5		Preparation for Review	0.75 days	Fri 10/18/24	Mon 10/21/24	3	PE1,DE3,RE1,SE4,TE1	1.1.2.1	Mon 10/21/24	
6		Review Meeting	0.45 days	Mon 10/21/24	Mon 10/21/24	5	TE1,SE4,RE1,DE3,PE1,PMB	1.1.2.2	Mon 10/21/24	
7		Rework	2.7 days	Mon 10/21/24	Thu 10/24/24	6	PM8	1.1.3	Thu 10/24/24	
8										
9		Documented Software Development Process Updates	3.18 days	Thu 10/24/24	Tue 10/29/24	7		1.2	Tue 10/29/24	
10		Process Changes	1.28 days	Thu 10/24/24	Fri 10/25/24	7	DE14,DE37	1.2.1	Fri 10/25/24	
11		Review Changes	0.77 days	Fri 10/25/24	Mon 10/28/24	10		1.2.2	Mon 10/28/24	
12		Preparation for review	0.51 days	Fri 10/25/24	Mon 10/28/24	10	PE30,RE61,SE13,TE32	1.2.2.1	Mon 10/28/24	
13		Review Meeting	0.26 days	Mon 10/28/24	Mon 10/28/24	12	PE30,RE61,SE13,TE32,DE14	1.2.2.2	Mon 10/28/24	
14		Rework	1.14 days	Mon 10/28/24	Tue 10/29/24	13	DE14,DE37	1.2.3	Tue 10/29/24	
15										
16		Requirements	3.41 days	Tue 10/29/24	Mon 11/4/24	14		1.3	Mon 11/4/24	
17		Write Requirements	1.64 days	Tue 10/29/24	Thu 10/31/24	14	RE64,RE67,RE66,RE65	1.3.1	Thu 10/31/24	
18		Review Requirements	0.84 days	Thu 10/31/24	Fri 11/1/24	17		1.3.2	Fri 11/1/24	
19		Preparation for Review	0.55 days	Thu 10/31/24	Thu 10/31/24	17	PE32,RE20,SE8,TE15	1.3.2.1	Thu 10/31/24	
20		Review Meeting	0.29 days	Thu 10/31/24	Fri 11/1/24	19	PE32,RE20,SE8,TE15,RE65	1.3.2.2	Fri 11/1/24	
21		Rework	0.93 days	Fri 11/1/24	Mon 11/4/24	20	RE64,RE67,RE65,RE66	1.3.3	Mon 11/4/24	
22										
23		Build the development and testing lab environment	4.02 days	Thu 10/24/24	Wed 10/30/24	7		1.4	Wed 10/30/24	
24		Hardware Environment	1.87 days	Thu 10/24/24	Mon 10/28/24	7		1.4.1	Mon 10/28/24	
25		Servers	1.4 days	Thu 10/24/24	Fri 10/25/24	7	SE9,SE11,SE383	1.4.1.1	Fri 10/25/24	
26		Clients	0.47 days	Fri 10/25/24	Mon 10/28/24	25	SE11,SE9,SE383	1.4.1.2	Mon 10/28/24	
27		Software Development Tools	0.52 days	Mon 10/28/24	Mon 10/28/24	26		1.4.2	Mon 10/28/24	
28		Build/compile tools	0.52 days	Mon 10/28/24	Mon 10/28/24	26	PE33,PE32,PE39	1.4.2.1	Mon 10/28/24	
29		Software Testing Tools	1.63 days	Mon 10/28/24	Wed 10/30/24	28		1.4.3	Wed 10/30/24	
30		Test cases Execution Tools	0.83 days	Mon 10/28/24	Tue 10/29/24	28	TE1,TE2,TE3	1.4.3.1	Tue 10/29/24	
31		Simulation Tools	0.8 days	Tue 10/29/24	Wed 10/30/24	30	TE1,TE2,TE3,TE7,TE38	1.4.3.2	Wed 10/30/24	
32										
33		Analysis	7.31 days	Mon 11/4/24	Wed 11/13/24	21		1.5	Wed 11/13/24	
34		Write Analysis Document	2.15 days	Mon 11/4/24	Wed 11/6/24	21	SE12,SE383	1.5.1	Wed 11/6/24	
35		Review Analysis Document	1.82 days	Wed 11/6/24	Fri 11/8/24	34		1.5.2	Fri 11/8/24	
36		Preparation for Analysis Document	1.34 days	Wed 11/6/24	Thu 11/7/24	34	PE380,RE65,TE41,SE17	1.5.2.1	Thu 11/7/24	
37		Review Meeting	0.48 days	Thu 11/7/24	Fri 11/8/24	36	PE380,RE65,TE41,SE17,SE3	1.5.2.2	Fri 11/8/24	
38		Rework	3.34 days	Fri 11/8/24	Wed 11/13/24	37	SE12,SE383	1.5.3	Wed 11/13/24	
39										
40		Design	7.17 days	Wed 11/13/24	Fri 11/22/24	38,31		1.6	Fri 11/22/24	
41		Write DD	1.83 days	Wed 11/13/24	Fri 11/15/24	38,31	SE1,SE4,SE8	1.6.1	Fri 11/15/24	
42		Review DD	2.06 days	Fri 11/15/24	Tue 11/19/24	41		1.6.2	Tue 11/19/24	
43		Preparation for DD	1.38 days	Fri 11/15/24	Mon 11/18/24	41	SE9,PE16,RE19,TE32	1.6.2.1	Mon 11/18/24	
44		Review Meeting	0.69 days	Mon 11/18/24	Tue 11/19/24	43	PE16,RE19,TE32,SE9,SE1	1.6.2.2	Tue 11/19/24	
45		Rework	3.28 days	Tue 11/19/24	Fri 11/22/24	44	SE1,SE4,SE8	1.6.3	Fri 11/22/24	
46										
47		Coding	55.03 days	Fri 11/22/24	Fri 2/7/25	45		1.7	Fri 2/7/25	
48		Write Code	31.67 days	Fri 11/22/24	Tue 1/7/25	45	PE382,PE39,PE381	1.7.1	Tue 1/7/25	
49		Unit Testing	18.83 days	Tue 1/7/25	Mon 2/3/25	48		1.7.2	Mon 2/3/25	
50		Prepare/Execute test cases	3.31 days	Tue 1/7/25	Fri 1/10/25	48	TE3,TE1,TE8,TE7	1.7.2.1	Fri 1/10/25	
51		Fix Found Defects	8.87 days	Fri 1/10/25	Thu 1/23/25	50	PE382,PE39,PE381	1.7.2.2	Thu 1/23/25	
52		Test Fixed Defects	6.65 days	Thu 1/23/25	Mon 2/3/25	51	TE3,TE1,TE8,TE7	1.7.2.3	Mon 2/3/25	
53		Code Inspection	4.53 days	Mon 2/3/25	Fri 2/7/25	52		1.7.3	Fri 2/7/25	
54		Prepare for Code Inspection	1.16 days	Mon 2/3/25	Tue 2/4/25	52	PE34,RE61,SE383,TE385	1.7.3.1	Tue 2/4/25	
55		Code Inspection Meeting	0.59 days	Tue 2/4/25	Tue 2/4/25	54	PE34,RE61,SE383,TE385,PE	1.7.3.2	Tue 2/4/25	
56		Rework	2.78 days	Tue 2/4/25	Fri 2/7/25	55	PE382,PE39,PE381	1.7.3.3	Fri 2/7/25	
57										
58		Testing	99.78 days	Mon 11/4/24	Fri 3/21/25	21		1.8	Fri 3/21/25	
59		Write test plan(TP)	5.12 days	Mon 11/4/24	Mon 11/11/24	21	TE40,TE386,TE39,TE41,TE15	1.8.1	Mon 11/11/24	
60		Review TP	2.42 days	Mon 11/11/24	Wed 11/13/24	59		1.8.2	Wed 11/13/24	
61		Preparation for TP	1.28 days	Mon 11/11/24	Tue 11/12/24	59	TE33,PE16,RE67,SE34	1.8.2.1	Tue 11/12/24	
62		Review TP Meeting	0.51 days	Tue 11/12/24	Wed 11/13/24	61	TE33,PE16,RE67,SE34,TE40	1.8.2.2	Wed 11/13/24	
63		Rework	0.63 days	Wed 11/13/24	Wed 11/13/24	62	TE40,TE386,TE39,TE41,TE15	1.8.2.3	Wed 11/13/24	
64		Execute TP(test cases)	4.85 days	Fri 2/7/25	Fri 2/14/25	56	TE385,TE8,TE10,TE386,TE3	1.8.3	Fri 2/14/25	
65		Fix Found Defects	22.6 days	Fri 2/14/25	Wed 3/19/25	64	PE380	1.8.4	Wed 3/19/25	
66		Test Fixed Defects	2.83 days	Wed 3/19/25	Fri 3/21/25	65	TE385,TE386,TE10,TE7	1.8.5	Fri 3/21/25	
67										
68		Documentation	4.47 days	Mon 11/4/24	Fri 11/8/24	21		1.9	Fri 11/8/24	
69		User Documentation	1.11 days	Mon 11/4/24	Tue 11/5/24	21	DE6,DE4,DE8,DE14	1.9.1	Tue 11/5/24	
70		Review UD	3.37 days	Tue 11/5/24	Fri 11/8/24	69		1.9.2	Fri 11/8/24	
71		Preparation for UD review	1.11 days	Tue 11/5/24	Wed 11/6/24	69	DE36,PE382,RE67,TE385	1.9.2.1	Wed 11/6/24	
72		Review UD Meeting	0.79 days	Wed 11/6/24	Thu 11/7/24	71	DE36,PE382,RE67,TE385	1.9.2.2	Thu 11/7/24	
73		Rework	1.48 days	Thu 11/7/24	Fri 11/8/24	72	DE6,DE4,DE8,DE14	1.9.2.3	Fri 11/8/24	

Document and comment on the Network Diagram:

Network Diagram helps in visualizing the activity sequence, dependencies and flow of project. It is important for Visualizing Dependencies (helps in identifying the sequence of tasks), Critical Path Analysis (it helps in identifying the critical path i.e., which is the longest sequence of dependent tasks that determines the shortest possible duration of the project), Scheduling (Helps managers to create more accurate schedules by mapping the flow of activities).



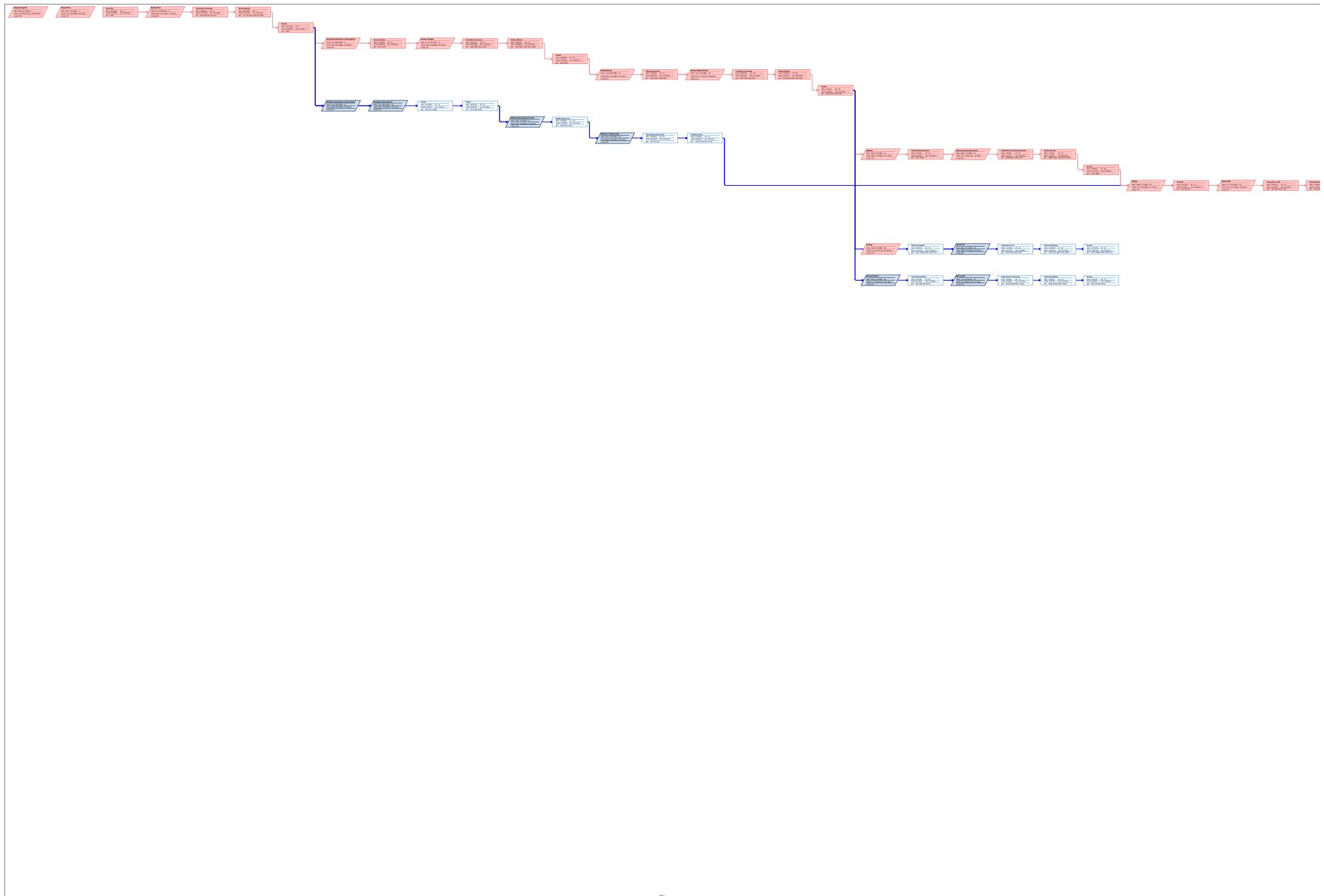
Document and comment on the resource pool utilization:

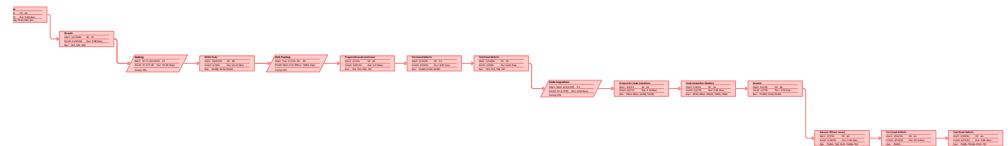
Resource Pool Utilization means management and allocation of available resources across various tasks or projects. It is important for Balancing Workload (even distribution of workloads among team members), Maximizing Efficiency (ensuring each person is working on tasks suited for their skill set which improves project efficiency), Budget Control. In our Assignment3 we have resource pool from assignment1 which was previously resource pool with assignment2 i.e., now we have resource assignment1 and assignment2 used in assignment3.

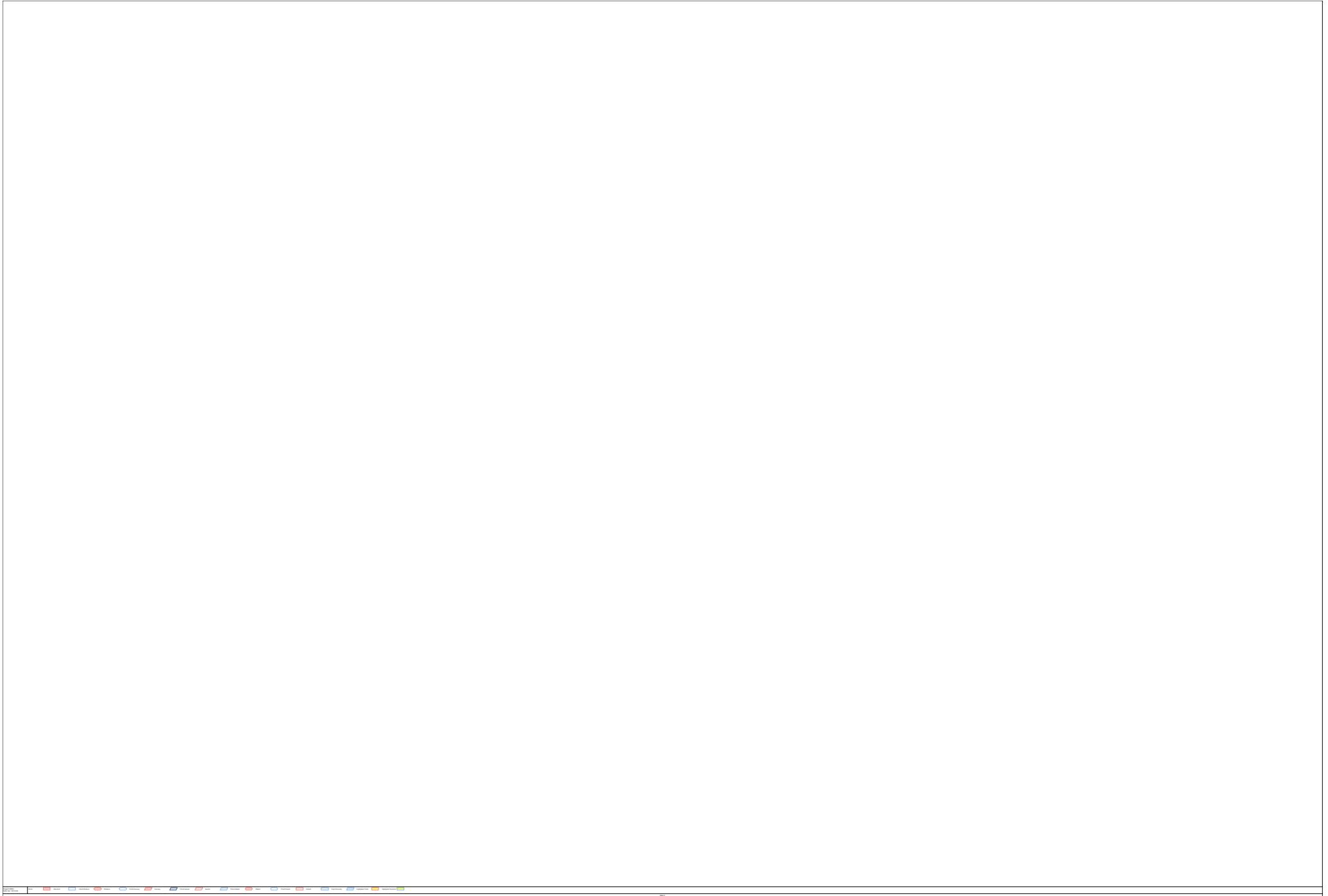
	(i)	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt.	Cost/Use	Accrue	Base
1		PM1	Work		PM1		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
2		PM2	Work		PM2		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
3		RE1	Work		RE1		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
4		RE4	Work		RE4		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
5		RE8	Work		RE8		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
6		RE9	Work		RE9		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
7		RE10	Work		RE10		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
8		RE11	Work		RE11		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
9		RE12	Work		RE12		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
10		RE18	Work		RE18		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
11		RE19	Work		RE19		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
12		RE20	Work		RE20		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
13		SE1	Work		SE1		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
14		SE4	Work		SE4		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
15		SE8	Work		SE8		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
16		SE9	Work		SE9		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
17		SE11	Work		SE11		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
18		SE12	Work		SE12		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
19		SE13	Work		SE13		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
20		SE17	Work		SE17		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
21		PE1	Work		PE1		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
22		PE2	Work		PE2		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
23		PE8	Work		PE8		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard

	(i)	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt.	Cost/Use	Accrue	Base
23		PE8	Work		PE8		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
24		PE9	Work		PE9		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
25		PE10	Work		PE10		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
26		PE11	Work		PE11		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
27		PE12	Work		PE12		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
28		PE16	Work		PE16		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
29		TE1	Work		TE1		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
30		TE2	Work		TE2		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
31		TE3	Work		TE3		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
32		TE7	Work		TE7		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
33		TE8	Work		TE8		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
34		TE9	Work		TE9		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
35		TE10	Work		TE10		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
36		TE15	Work		TE15		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
37		DE3	Work		DE3		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
38		DE4	Work		DE4		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
39		DE5	Work		DE5		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
40		DE6	Work		DE6		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
41		DE7	Work		DE7		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
42		DE8	Work		DE8		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
43		DE9	Work		DE9		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
44		DE14	Work		DE14		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
45		PM7	Work		PM7		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
	(i)	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt.	Cost/Use	Accrue	Base
46		PM8	Work		PM8		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
47		PM9	Work		PM9		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
48		PM10	Work		PM10		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
49		RE60	Work		RE60		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
50		RE61	Work		RE61		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
51		RE64	Work		RE64		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
52		RE65	Work		RE65		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
53		RE66	Work		RE66		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
54		RE67	Work		RE67		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
55		SE22	Work		SE22		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
56		SE23	Work		SE23		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
57		SE24	Work		SE24		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
58		SE34	Work		SE34		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
59		PE30	Work		PE30		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
60		PE31	Work		PE31		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
61		PE32	Work		PE32		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
62		PE33	Work		PE33		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
63		PE34	Work		PE34		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
64		PE35	Work		PE35		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
65		PE38	Work		PE38		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
66		PE39	Work		PE39		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
67		TE32	Work		TE32		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
68		TE33	Work		TE33		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard

69		TE34	Work		TE34		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
70		TE38	Work		TE38		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
71		TE39	Work		TE39		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
72		TE40	Work		TE40		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
73		TE41	Work		TE41		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
74		DE36	Work		DE36		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
75		DE37	Work		DE37		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
76		DE38	Work		DE38		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
77		DE46	Work		DE46		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
78		DE47	Work		DE47		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
79		DE48	Work		DE48		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
80		DE49	Work		DE49		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
81		TE385	Work		TE385		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
82		TE386	Work		TE386		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
83		SE383	Work		SE383		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
84		PE380	Work		PE380		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
85		PE381	Work		PE381		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
86		PE382	Work		PE382		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
87		DE380	Work		DE380		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
88		DE381	Work		DE381		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard







Step 1 - Identify tasks

Step 2 - ~~Extrapolate~~ Extrapolate productivity rates

	#A1	#A2	#A3
Project plan			
Write plan	3 pages/Hour	4 pages/Hour	$\frac{3+4}{2} = 3.5 \approx 4$
Review plan			
Preparation for review	5 pages/Hour	4 pages/Hour	$\frac{5+4}{2} = 4.5 \approx 5$
Review Meeting	5 pages/Hour	8 pages/Hour	$\frac{5+8}{2} = 6.5 \approx 7$
Rework	4 defects/Hour	6 defects/Hour	$\frac{4+6}{2} = 5$

Documented Software Development process update - Given in Assignment 3.

	#A1	#A2	#A3
Requirements			
Write requirements	5 Req./hour	3 Req./hour	$\frac{5+3}{2} = 4$
Review requirements			
Preparation for review	18 Req./hour	5 Req./hour	$\frac{18+5}{2} = 11.5 \approx 12$
Review Meeting	28 Req./hour	8 Req./hour	$\frac{28+8}{2} = 18$
Rework	10 defects/hour	5 defects/hour	$\frac{10+5}{2} = 7.5 \approx 8$

Build the development and testing lab environment - give in Assignment 3.

	#A1	#A2	#A3
Analysis			
Write analysis document	5 pages/hour	-	5 pages/hour
Review analysis document			
Preparation for analysis document	4 pages/hour	-	4 pages/hour
Review Meeting	9 pages/hour	-	9 pages/hour
Rework	6 defects/hour	-	6 defects/hour

Analysis phase only in Assignment 1 and not in Assignment 2 so, we take it directly from Assignment 1.

	#A1	#A2	#A3
Design			
Write DD	5 pages/hour	4 pages/hour	$\frac{5+4}{2} = 4.5 \approx 5$
Review DD			
Preparation for DD	4 pages/hour	6 pages/hour	$\frac{4+5}{2} = 4.5 \approx 5$
Review Meeting	8 pages/hour	8 pages/hour	$\frac{8+8}{2} = 8$
Rework	5 defects/hour	7 defects/hour	$\frac{5+7}{2} = 6$

	#A1	#A2	#A3
Coding			
Write code	5 SLOC/hour	5 SLOC/hour	$\frac{5+5}{2} = 5$
Unit Testing			
Prepare/execute test cases	10 test cases/day	40 test cases/day 5 test cases/hour	$\frac{40+10}{2} = 25$
Fix found defects	8 defects/day	12 defects/day	$\frac{8+12}{2} = 10$
Test found defects	12 defects/day	8 defects/day	$\frac{12+8}{2} = 10$
Code Inspection			
Prepare for code inspection	113 SLOC/hour	90 SLOC/hour	$\frac{113+90}{2} = 101.5 \approx 102$
Code Inspection Meeting	189 SLOC/hour	135 SLOC/hour	$\frac{189+135}{2} = 162$
Rework	5 defects/hour	5 defects/hour	$\frac{5+5}{2} = 5$

Testing is already given in assignment 3.

	#A1	#A2	#A3
Documentation			
User documentation	4 pages/hour	6 pages/hour	$\frac{4+6}{2} = 5$
Review UD			
Preparation for UD review meeting	5 pages/hour	5 pages/hour	$\frac{5+5}{2} = 5$
Review UD Meeting	7 pages/hour	7 pages/hour	$\frac{7+7}{2} = 7$
Rework	6 defects/hour	4 defects/hour	$\frac{6+4}{2} = 5$

Step 3 - Extrapolate work size

for write plan = 150

work size of project plan = 0.15

'Rework'

no. of defects for Rework in #A1 = $\frac{22 * 1000}{31} = 709.68 \approx 710$

no. of defects for Rework in #A2 = $\frac{99 * 1000}{135} = 733.34 \approx 733$

Average defects from #A1 and #A2

$$= \frac{710 + 733}{2} = 721.5 \approx 722$$

In #A3 taking average value $722 * 0.15 = 108.3 \approx \underline{108}$ defects

for Requirements = 210

work size of Requirements = 0.21

'Rework'

no. of defects for Rework in #A1 = $\frac{136 * 1000}{112} = 1214.2 \approx 1214$

no. of defects for Rework in #A2 = $\frac{413 * 1000}{389} = 1061.6 \approx 1062$

Average defects from #A1 and #A2

$$= \frac{1214 + 1062}{2} = 1138$$

In #A3 taking average values $1138 * 0.21 = 238.9 \approx \underline{239}$ defects

for Analysis = 172

work size of analysis = 0.172

'Rework'

no. of defects for Rework in #A1 = $\frac{123 * 1000}{66} = 1863.6 \approx 1864$

In #A3 defects for rework = $1864 * 0.172 = 320.6$
 $\approx \underline{321 \text{ defects}}$

for Design = 220.6

work size of Design = 0.220

'Rework'

defects for Rework in #A1 = $\frac{188 * 1000}{89} = 2112.3 \approx 2112$

defects for Rework in #A2 = $\frac{509 * 1000}{234} = 2175.2 \approx 2175$

In #A3 defects for rework = $(\frac{2112 + 2175}{2}) * 0.220$

$$= 2143.5 \approx 2144 * 0.220$$

$$= 471.68 \approx \underline{472 \text{ defects}}$$

for Coding = 3800

work size of Coding = $\frac{3800}{1000} = 3.8$

'Prepare/Execute test cases'

defects in #A1 = $\frac{256 * 1000}{3800} = 67.36 \approx 67$

test cases

defects in #A2 = $\frac{1045 * 1000}{9725} = 107.45 \approx 107$

Average defects for #A1 and #A2

$$\frac{67 + 107}{2} = 87$$

In #A3 taking Average value = $87 * 3.8 = 330.6 \approx 331$ test cases

'Fix found Defects'

defects in #A1 = $\frac{179 * 1000}{3800} = 47.10 \approx 47$

defects in #A2 = $\frac{902 * 1000}{9725} = 92.75 \approx 93$

Average defects for #A1 and #A2

$$\frac{47 + 93}{2} = 70$$

In #A3 taking Average value = $70 * 3.8 = 254.6 \approx 255$ defects
= 266 defects

'Test fixed defects'

same values as 'fix found defects', so in #A3
255 defects.

'Rework'

$$\text{defects in #A1} = \frac{188 * 1000}{3800} = 49.47 \approx 49$$

$$\text{defects in #A2} = \frac{1230 * 1000}{9725} = 126.4 \approx 126$$

Average defects for #A1 and #A2

$$= \left(\frac{49 + 126}{2} \right) * 3.8 = 87.5 \approx 88 * 3.8$$

$$= 334.4 \approx \underline{334 \text{ defects}}$$

for documentation = 177

work size of documentation = 0.177

'Rework'

$$\text{defects in #A1} = \frac{174 * 1000}{134} = 1298.5 \approx 1299$$

$$\text{defects in #A2} = \frac{532 * 1000}{389} = 1367.6 \approx 1368$$

Average defects for #A1 and #A2

$$= \left(\frac{1299 + 1368}{2} \right) * 0.177$$

$$= 1333.5 \approx 1334 * 0.177$$

$$= 236.1 \approx \underline{236 \text{ defects}}$$

Calculating Duration Productivity -

→ Project Plan

- Write plan = $150/4 = 37.5 \text{ hours} = 4.68 \text{ days}$
- Review plan
 - Preparation for Review = $150/5 = 30 \text{ hours} = 3.75 \text{ days}$
 - Review Meeting = $150/7 = 21.42 \text{ hours} = 2.67 \text{ days}$
- Rework = $108/5 = 21.6 \text{ hours} = 2.7 \text{ days}$

→ Documented Software Development Process Updates

- Process Changes = $82/4 = 20.5 \text{ hours} = 2.56 \text{ days}$
- Review Changes
 - Preparation for review = $82/5 = 16.4 \text{ hours} = 2.05 \text{ days}$
 - Review Meeting = $82/8 = 10.25 \text{ hours} = 1.28 \text{ days}$
- Rework = $91/5 = 18.2 \text{ hours} = 2.27 \text{ days}$

→ Requirements

- Write Requirements = $210/4 = 52.5 \text{ hours} = 6.56 \text{ days}$
- Review Requirements
 - Preparation for Review = $210/12 = 17.5 \text{ hours} = 2.18 \text{ days}$
 - Review Meeting = $210/18 = 11.66 \text{ hours} = 1.45 \text{ days}$
- Rework = $239/8 = 29.87 \text{ hours} = 3.73 \text{ days}$

→ Build the development and testing lab environment

- Hardware Environment
 - Servers = $12/1 = 12 \text{ days}$
 - Clients = $21/5 = 4.2 \text{ days}$
- Software Development Tools
 - Build / compile tools = $12/1 = 12 \text{ hours} = 1.5 \text{ days}$
- Software Testing Tools
 - Test cases Execution tools = $5/2 = 2.5 \text{ days}$
 - Simulation tools = $8/2 = 4 \text{ days}$

→ Analysis

- Write Analysis Document = $172 / 5 = 34.4 \text{ hours} = 4.3 \text{ days}$
- Review Analysis Document
 - Preparation for Analysis Document = $172 / 4 = 43 \text{ hours}$
 - Meeting = $172 / 9 = 19.11 \text{ hours} = 2.38 \text{ days}$
- Rework = $321 / 6 = 53.5 \text{ hours} = 6.68 \text{ days}$

→ Design

- Write DD = $220 / 5 = 44 \text{ hours} = 5.5 \text{ days}$
- Review DD
 - Preparation for DD = $220 / 5 = 44 \text{ hours} = 5.5 \text{ days}$
 - Review Meeting = $220 / 8 = 27.5 \text{ hours} = 3.43 \text{ days}$
- Rework = $472 / 6 = 78.66 \text{ hours} = 9.83 \text{ days}$

→ Coding

- Write code = $3800 / 5 = 760 \text{ hours} = 95 \text{ days}$
- Unit Testing
 - Prepare/Execute test cases = $331 / 25 = 13.24 \text{ days}$
 - Fix Found Defects = $266 / 10 = 26.6 \text{ days}$
 - Test fixed Defects = $266 / 10 = 26.6 \text{ days}$
- Code Inspection
 - Prepare for Code Inspection = $3800 / 102 = 37.25 \text{ hours} = 4.65 \text{ days} = 4.65 \text{ days}$
 - Code Inspection Meeting = $3800 / 162 = 23.45 \text{ hours} = 2.93 \text{ days}$
- Rework = $334 / 5 = 66.8 \text{ hours} = 8.35 \text{ days}$

→ Testing

- Write test plan (TP) = $205/8 = 25.62$ days
- Review TP
 - Preparation for TP = $205/5 = 41$ hours = 5.12 days
 - Review TP Meeting = $205/10 = 20.5$ hours = 2.56 days
 - Rework = $101/4 = 25.25$ hours = 3.15 days
- Execute TP (test cases) = $194/8 = 24.25$ days
- Fix Found Defects = $113/5 = 22.6$ days
- Test Fixed Defects = $113/10 = 11.3$ days

→ Documentation

- User Documentation = $177/5 = 35.4$ hours = 4.42 days
- Review UD
 - Preparation for UD review = $177/5 = 35.4$ hours = 4.42 days
 - Review UD Meeting = $177/7 = 25.28$ hours = 3.16 days
 - Rework = $236/5 = 47.2$ hours = 5.9 days

7) The earliest finish date for this project if it is scheduled to start on 10/14/24 is ~~2/17/25~~ → 3/21/25

8) No, the project with the resources I assigned cannot be completed 2 months after it starts but if we can assign proper resources we could be completing it within 2 months.