MS Project Professional 2021

Tutorial #2 - Demo

CS 587 – Software Project Management
Dr. Atef Bader
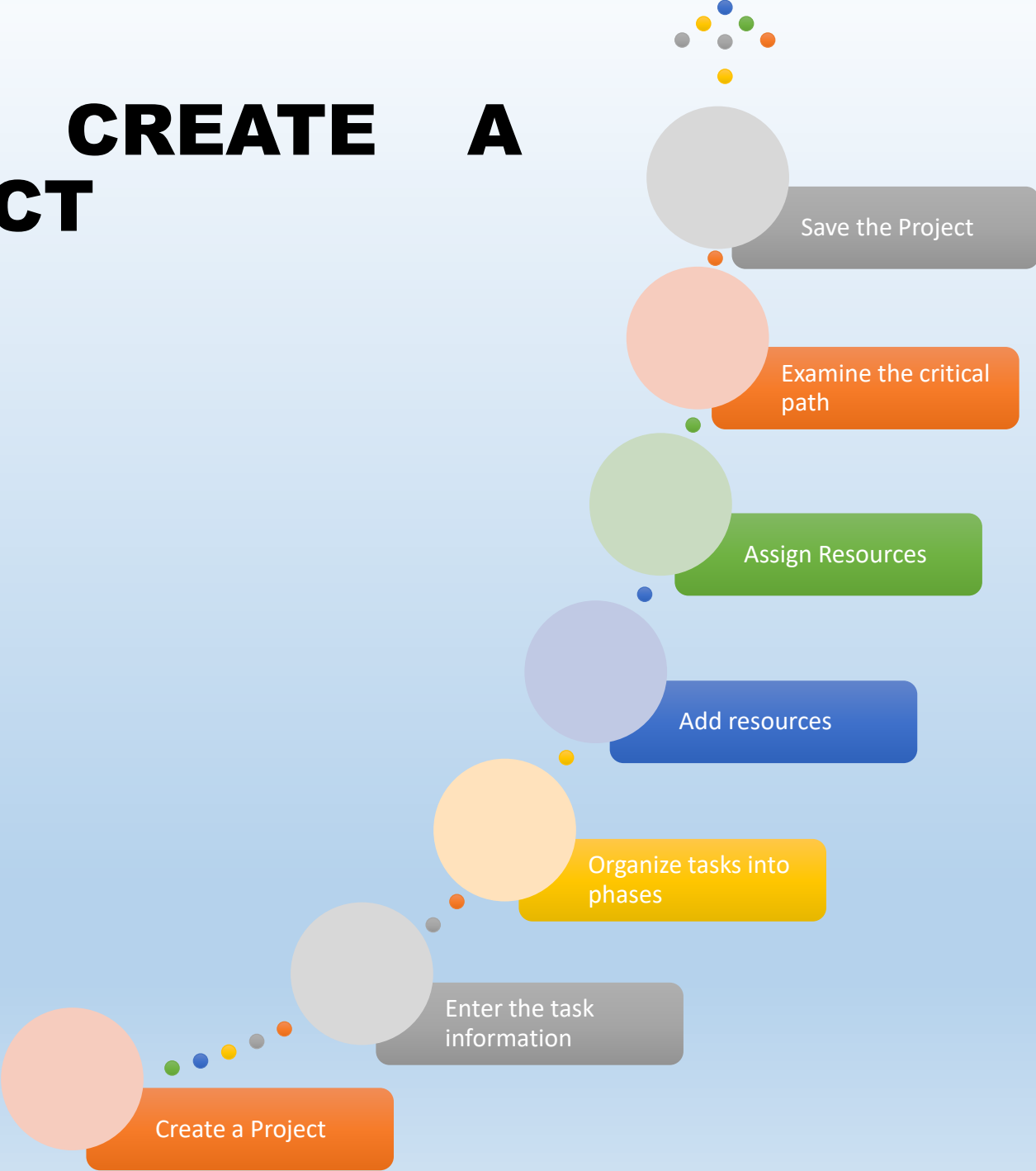Illinois Institute of Technology

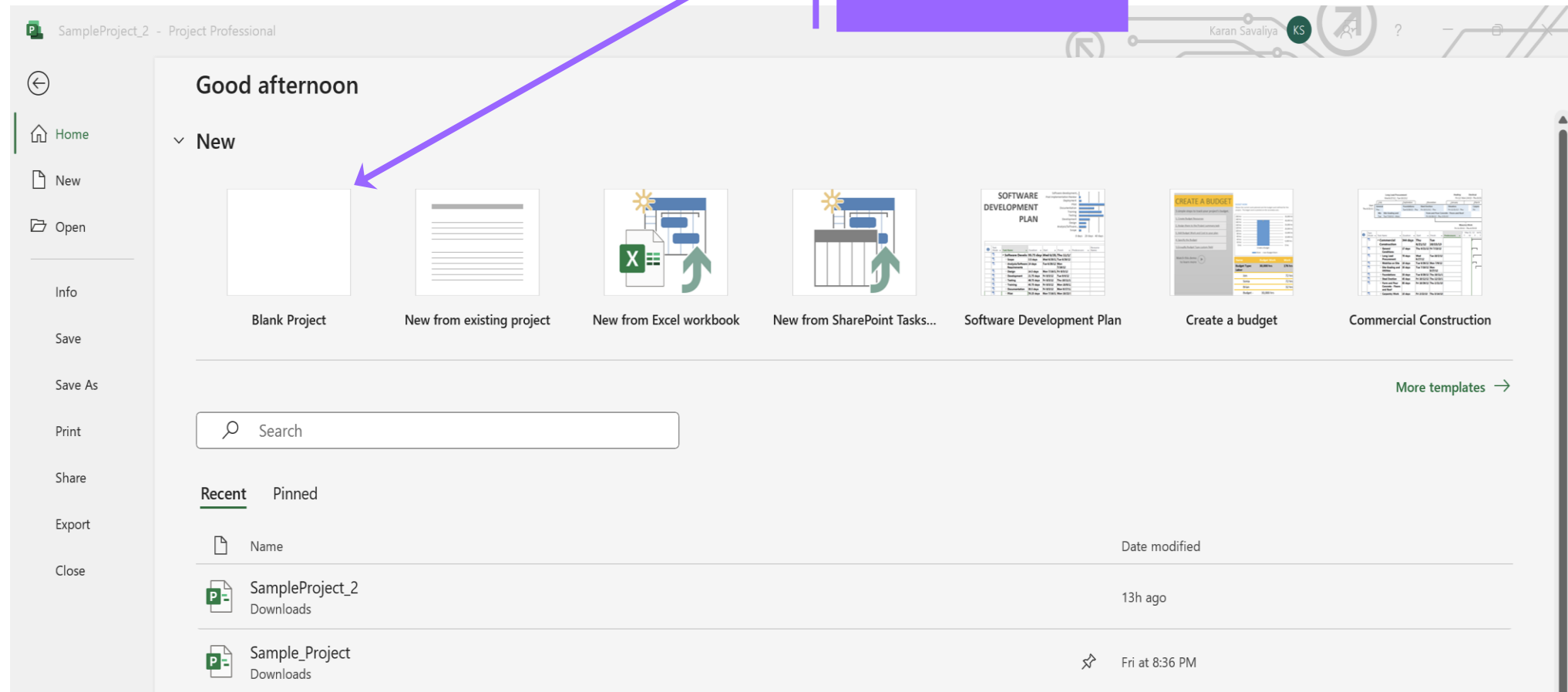# Develop the Following Development Project

Activity	Predecessor	Human Resources	Duration
1. Requirement definition and analysis		•Requirement Engineer •Team Leader •Project Manager	3 Days
2. Requirement Review	1	•Business Analyst •Team Leader •Project Manager	1 Day
3. Analysis	2	•Designer •Team Leader	6 Days
4. Analysis Review	3	•Team Leader •Project Manager •Designer	1 Day
5. Design	4	•Designer •Team Leader	4 Days
6. Design Review	5	•Team Leader •Project Manager •Designer	1 Day
7. Programming	6	•Programmer	4 Days
8. Code Review	7	•Programmer •Team Leader •Tester •Requirement Engineer	3 Days
9. Testing	8	•Testers •Requirement Engineer	6 Days
10. Installation	9	•Programmer •Team Leader •Program Manager	2 Days

STEPS TO CREATE A NEW PROJECT

Save the Project

Examine the critical path

Assign Resources

Add resources

Organize tasks into phases

Enter the task information

Create a Project

Step 1: Creating a new project

➢ Select a new blank project

➢ Create a new project called "SampleProject"

Step 2: Entering the Task Information

➢ Write the name of each task in the spreadsheet using the column "***Task Name***".

➢ Write the duration in days of each task in the spreadsheet using the column "***Duration***".

➢ Write the predecessors of each task in the spreadsheet using the column "***Predecessors***" (If you can't see the column, try to expand the vertical bar that divides the spreadsheet to the Gantt Chart).

➢ You can also write the successors of each task in the spreadsheet using the column "***Successors***"

Entering Task Name, Duration and Predecessors

		Task	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1			Sample Project	15.33 days	Tue 8/27/24	Tue 9/17/24		
2			Requirements	1.33 days	Tue 8/27/24	Wed 8/28/24		
3			Requirements Definitic	1 day	Tue 8/27/24	Tue 8/27/24		Project Manager,Team Leader
4			Requirements Review	0.33 days	Wed 8/28/24	Wed 8/28/24	3	Business Analyst,Project Man;
5			Analysis	3.5 days	Wed 8/28/24	Mon 9/2/24		
6			Detailed Analysis	3 days	Wed 8/28/24	Mon 9/2/24	4	Designer,Team Leader
7			Analysis Review	0.5 days	Mon 9/2/24	Mon 9/2/24	6	Designer,Project Manager
8			Design	2.5 days	Mon 9/2/24	Thu 9/5/24		
9			Detailed Design	2 days	Mon 9/2/24	Wed 9/4/24	7	Designer,Team Leader
10			Design Review	0.5 days	Wed 9/4/24	Thu 9/5/24	9	Designer,Project Manager
11			Coding	5.5 days	Thu 9/5/24	Thu 9/12/24		
12			Programming	4 days	Thu 9/5/24	Wed 9/11/24	10	Programmer
13			Code Review	1.5 days	Wed 9/11/24	Thu 9/12/24	12	Requirement Engineer,Project
14			Testing	14.33 days	Tue 8/27/24	Mon 9/16/24		
15			Test Plan	3 days	Tue 8/27/24	Thu 8/29/24		Tester
16			Testing	1.5 days	Thu 9/12/24	Mon 9/16/24	13	Tester,Requirement Engineer
17			Installation	1 day	Mon 9/16/24	Tue 9/17/24	16	Project Manager,Team Leader

➢ Entering Task Name, Duration and Successors

		Task Mode	Name	Leveling Delay	Duration	Start	Finish	Successors	Resource Names
1			**Sample Project**	**0 edays**	**15.33 days**	**Tue 8/27/24**	**Tue 9/17/24**		
2			**Requirements**	**0 edays**	**1.33 days**	**Tue 8/27/24**	**Wed 8/28/24**		
3			Requirements Definition	0 edays	1 day	Tue 8/27/24	Tue 8/27/24	4	Project Manager,Team Leader,Requirement Engineer
4			Requirements Review	0 edays	0.33 days	Wed 8/28/24	Wed 8/28/24	6	Business Analyst,Project Manager,Team Leader
5			**Analysis**	**0 edays**	**3.5 days**	**Wed 8/28/24**	**Mon 9/2/24**		
6			Detailed Analysis	0 edays	3 days	Wed 8/28/24	Mon 9/2/24	7	Designer,Team Leader
7			Analysis Review	0 edays	0.5 days	Mon 9/2/24	Mon 9/2/24	9	Designer,Project Manager
8			**Design**	**0 edays**	**2.5 days**	**Mon 9/2/24**	**Thu 9/5/24**		
9			Detailed Design	0 edays	2 days	Mon 9/2/24	Wed 9/4/24	10	Designer,Team Leader
10			Design Review	0 edays	0.5 days	Wed 9/4/24	Thu 9/5/24	12	Designer,Project Manager
11			**Coding**	**0 edays**	**5.5 days**	**Thu 9/5/24**	**Thu 9/12/24**		
12			Programming	0 edays	4 days	Thu 9/5/24	Wed 9/11/24	13	Programmer
13			Code Review	0 edays	1.5 days	Wed 9/11/24	Thu 9/12/24	16	Requirement Engineer,Project Manager
14			**Testing**	**0 edays**	**14.33 days**	**Tue 8/27/24**	**Mon 9/16/24**		
15			Test Plan	0 edays	3 days	Tue 8/27/24	Thu 8/29/24		Tester
16			Testing	0 edays	1.5 days	Thu 9/12/24	Mon 9/16/24	17	Tester,Requirement Engineer
17			Installation	0 edays	1 day	Mon 9/16/24	Tue 9/17/24		Project Manager,Team Leader

Step 3: Organize Tasks into Phases

- Before

Task Name	Duration
	.
Requirement definition and analysis	3 days
Requirement Review	1 day
Analysis	6 days
Analysis Review	1 day
Design	4 days
Design Review	1 day
Programming	4 days
Code Review	3 days
Testing	6 days
Installation	2 days

- After

Task Name	Duration
⊿ **SampleProject**	**31 days**
⊿ **Requirements**	**4 days**
Requirement definition and analysis	3 days
Requirement Review	1 day
⊿ **Analysis**	**7 days**
Analysis	6 days
Analysis Review	1 day
⊿ **Design**	**5 days**
Design	4 days
Design Review	1 day
⊿ **Coding**	**7 days**
Programming	4 days
Code Review	3 days
Testing	6 days
Installation	2 days

Step 3: Organize Tasks into Phases

➢Group the tasks by the Phase according to the table of tasks shown before, and add a group that encloses the phases named "**SampleProject**", and this will represent the plan as a whole.

➢You may do this by:
- Adding a new task "**SampleProject**"
- Highlight the task you want to indent
- Click the indent icon.

➢Insert a new task at the beginning that will group everything. Here we insert "Requirements Phase" first.

➢Highlight the tasks that are going to be added as sub tasks and click "***Indent***" icon.

➢Now repeat these steps to create the Subgroup that will represent the Analysis, Design and Coding phases.

	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
ⓘ							
	⇥	◢ **Sample Project**	**15.33 days**	**Tue 8/27/24**	**Tue 9/17/24**		
	⇥	◢ **Requirements**	**1.33 days**	**Tue 8/27/24**	**Wed 8/28/24**		
	⇥	Requirements Definition	1 day	Tue 8/27/24	Tue 8/27/24		Requirement Engineer,Project Manager, Team Leader
	⇥	Requirements Review	0.33 days	Wed 8/28/24	Wed 8/28/24	3	Business Analyst,Project Manager,Team Leader
	⇥	◢ **Analysis**	**3.5 days**	**Wed 8/28/24**	**Mon 9/2/24**		
	⇥	Detailed Analysis	3 days	Wed 8/28/24	Mon 9/2/24	4	Designer,Team Leader
	⇥	Analysis Review	0.5 days	Mon 9/2/24	Mon 9/2/24	6	Designer,Project Manager
	⇥	◢ **Design**	**2.5 days**	**Mon 9/2/24**	**Thu 9/5/24**		
	⇥	Detailed Design	2 days	Mon 9/2/24	Wed 9/4/24	7	Designer,Team Leader
	⇥	Design Review	0.5 days	Wed 9/4/24	Thu 9/5/24	9	Designer,Project Manager
	⇥	◢ **Coding**	**5.5 days**	**Thu 9/5/24**	**Thu 9/12/24**		
	⇥	Programming	4 days	Thu 9/5/24	Wed 9/11/24	10	Programmer
	⇥	Code Review	1.5 days	Wed 9/11/24	Thu 9/12/24	12	Requirement Engineer,Project Manager
	⇥	◢ **Testing**	**14.33 days**	**Tue 8/27/24**	**Mon 9/16/24**		
	⇥	Test Plan	3 days	Tue 8/27/24	Thu 8/29/24		Tester
	⇥	Testing	1.5 days	Thu 9/12/24	Mon 9/16/24	13	Tester,Requirement Engineer
	⇥	Installation	1 day	Mon 9/16/24	Tue 9/17/24	16	Project Manager,Team Leader

■ Now repeat these steps to create the Subgroup that will represent the Analysis, Design and Coding phases.

	Task Mode ▾	Task Name ▾	Duration ▾	Start ▾	Finish ▾	Predecessors ▾	Resource Names ▾
	⯈	⊿**Sample Project**	**15.33 days**	**Tue 8/27/24**	**Tue 9/17/24**		
	⯈	⊿**Requirements**	**1.33 days**	**Tue 8/27/24**	**Wed 8/28/24**		
	⯈	Requirements Definition	1 day	Tue 8/27/24	Tue 8/27/24		Requirement Engineer,Project Manager, Team Leader
	⯈	Requirements Review	0.33 days	Wed 8/28/24	Wed 8/28/24	3	Business Analyst,Project Manager,Team Leader
	⯈	⊿**Analysis**	**3.5 days**	**Wed 8/28/24**	**Mon 9/2/24**		
	⯈	Detailed Analysis	3 days	Wed 8/28/24	Mon 9/2/24	4	Designer,Team Leader
	⯈	Analysis Review	0.5 days	Mon 9/2/24	Mon 9/2/24	6	Designer,Project Manager
	⯈	⊿**Design**	**2.5 days**	**Mon 9/2/24**	**Thu 9/5/24**		
	⯈	Detailed Design	2 days	Mon 9/2/24	Wed 9/4/24	7	Designer,Team Leader
	⯈	Design Review	0.5 days	Wed 9/4/24	Thu 9/5/24	9	Designer,Project Manager
	⯈	⊿**Coding**	**5.5 days**	**Thu 9/5/24**	**Thu 9/12/24**		
	⯈	Programming	4 days	Thu 9/5/24	Wed 9/11/24	10	Programmer
	⯈	Code Review	1.5 days	Wed 9/11/24	Thu 9/12/24	12	Requirement Engineer,Project Manager
	⯈	⊿**Testing**	**14.33 days**	**Tue 8/27/24**	**Mon 9/16/24**		
	⯈	Test Plan	3 days	Tue 8/27/24	Thu 8/29/24		Tester
	⯈	Testing	1.5 days	Thu 9/12/24	Mon 9/16/24	13	Tester,Requirement Engineer
	⯈	Installation	1 day	Mon 9/16/24	Tue 9/17/24	16	Project Manager,Team Leader

Sub-Task

Step 4: Add Resources

➢Go to the view "Resource Sheet".

➢Add the necessary resources to the "Resources Sheet", we are going to use only the Name, Initials and Standard rate in $/hr The resources are going to be taken from the table showed at the beginning of the example, more specifically from the column "Human Resource".

➢Now, with the Resources already registered in the project file, go back to the View "Gantt Chart".

File   Task   Resource   Report   Project   View   Help   Resource Sheet Format   Tell me what you want to do

	Calibri	11					Mark on Track			Inspect			Summary		Notes			

Gantt Chart   Paste   B I U   Respect Links   Manually Schedule Auto Schedule   Move   Milestone   Information   Details   Scroll to Task

Mode   Deliverable   Add to Timeline

View   Clipboard   Font   Schedule   Tasks   Insert   Properties   Editing

Today
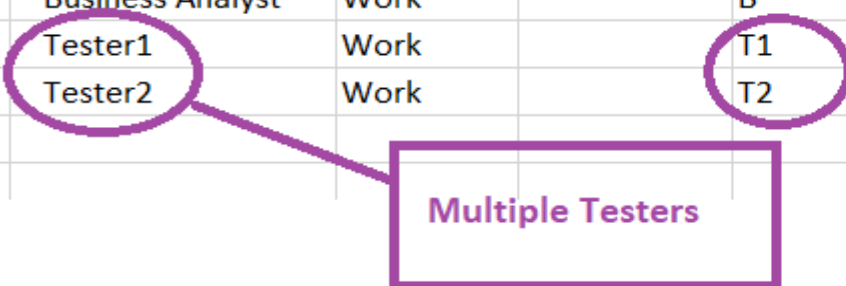
Start   Sep 1, '24   Sep 8, '24   Add tasks with dates to the timeline   Sep 15, '24   Finish

	ⓘ	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base	Code	Add New Column
1		Requirement Engineer	Work		R		100%	$0.00/hr	$0.00/hr	$0.00	Prorated	Standard		
2		Team Leader	Work		T		100%	$0.00/hr	$0.00/hr	$0.00	Prorated	Standard		
3		Project Manager	Work		P		100%	$0.00/hr	$0.00/hr	$0.00	Prorated	Standard		
4		Designer	Work		D		100%	$0.00/hr	$0.00/hr	$0.00	Prorated	Standard		
5		Programmer	Work		P		100%	$0.00/hr	$0.00/hr	$0.00	Prorated	Standard		
6		Tester	Work		T		100%	$0.00/hr	$0.00/hr	$0.00	Prorated	Standard		
7		Business Analyst	Work		B		100%	$0.00/hr	$0.00/hr	$0.00	Prorated	Standard		

Adding Multiple Resources of Same Type

➢Go to the view "Resource Sheet".

➢Add the resources, differentiating them by numbering it.

➢You can change the initials to reflect different resources of same type.

➢In our example, we add two more testers as follows:

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue
	Requirement Engineer	Work		R		100%	$0.00/hr	$0.00/hr	$0.00	Prorated
	Team Leader	Work		T		100%	$0.00/hr	$0.00/hr	$0.00	Prorated
	Project Manager	Work		P		100%	$0.00/hr	$0.00/hr	$0.00	Prorated
	Designer	Work		D		100%	$0.00/hr	$0.00/hr	$0.00	Prorated
	Programmer	Work		P		100%	$0.00/hr	$0.00/hr	$0.00	Prorated
	Tester	Work		T		100%	$0.00/hr	$0.00/hr	$0.00	Prorated
	Business Analyst	Work		B		100%	$0.00/hr	$0.00/hr	$0.00	Prorated
	Tester1	Work		T1		100%	$0.00/hr	$0.00/hr	$0.00	Prorated
	Tester2	Work		T2		100%	$0.00/hr	$0.00/hr	$0.00	Prorated

Multiple Testers

Step 5: Assign Resources

➢Go to "Resource" tab.

➢Then click "Assign resources" icon. A "Assign Resources" window appears.

➢Click the resource to be assigned in the window, and then click the task in the spreadsheet behind.

➢Then click the button "assign".

➢Repeat step 3 till all resources are assigned to the tasks.

Method 1: Drop down list.

Method 2: Choosing "Assign Resources" option.

Detailed steps for assigning multiple resources

1. If you have assigned multiple resources to the task, first remove all the resources that you have assigned for the task. If you have not assigned resources yet, please move to Step 2 below.

2. Change the mode of the task to "Auto Scheduled" as shown below in screenshot.

Set to Auto Mode

	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
		▲Sample Project	15.33 days	Tue 8/27/24	Tue 9/17/24		
		▲Requirements	1.33 days	Tue 8/27/24	Wed 8/28/24		
		Requirements Definition	1 day	Tue 8/27/24	Tue 8/27/24		Requirement Engineer,Project Manager, Team Leader
		Requirements Review	0.33 days	Wed 8/28/24	Wed 8/28/24	3	Business Analyst,Project Manager,Team Leader
		▲Analysis	3.5 days	Wed 8/28/24	Mon 9/2/24		
		Detailed Analysis	3 days	Wed 8/28/24	Mon 9/2/24	4	Designer,Team Leader
		Analysis Review	0.5 days	Mon 9/2/24	Mon 9/2/24	6	Designer,Project Manager
		▲Design	2.5 days	Mon 9/2/24	Thu 9/5/24		
		Detailed Design	2 days	Mon 9/2/24	Wed 9/4/24	7	Designer,Team Leader
		Design Review	0.5 days	Wed 9/4/24	Thu 9/5/24	9	Designer,Project Manager
		▲Coding	5.5 days	Thu 9/5/24	Thu 9/12/24		
		Programming	4 days	Thu 9/5/24	Wed 9/11/24	10	Programmer
		Code Review	1.5 days	Wed 9/11/24	Thu 9/12/24	12	Requirement Engineer,Project Manager
		▲Testing	14.33 days	Tue 8/27/24	Mon 9/16/24		
		Test Plan	3 days	Tue 8/27/24	Thu 8/29/24		Tester
		Testing	1.5 days	Thu 9/12/24	Mon 9/16/24	13	Tester,Requirement Engineer
		Installation	1 day	Mon 9/16/24	Tue 9/17/24	16	Project Manager,Team Leader

3. Assign the resources that you want to the task. Once you assign resources, you will see a yellow color warning sign on the left. Note that you will get this warning sign only if you assign 2 or more resources to the task.

Detailed steps for assigning multiple resources

4. Click on the yellow warning sign and you will see three options. Select the option "Reduce duration but keep the amount of work" to handle this warning.

5. Note: If you fail to click on one of the options, the duration will still not change. In that case, repeat again from Step 1.


6. MS Project will automatically update the Duration according to the number of resources assigned to a task.

7. Check again to make sure that the duration has changed (if it was supposed to change).

Step 6: Examine the critical Path

➢For the example, we are going to use the Detailed Gantt Chart to view the Critical Path, because this option also shows the **Slack Time** of the activities that don't belong to the critical path, therefore first we must select the option "More Views".

➢Then we must select the Detail Gantt to obtain the view desired.

➢The View should look like this (If the Gantt Chart doesn't appear check that you are in the right date on the Gantt Chart).
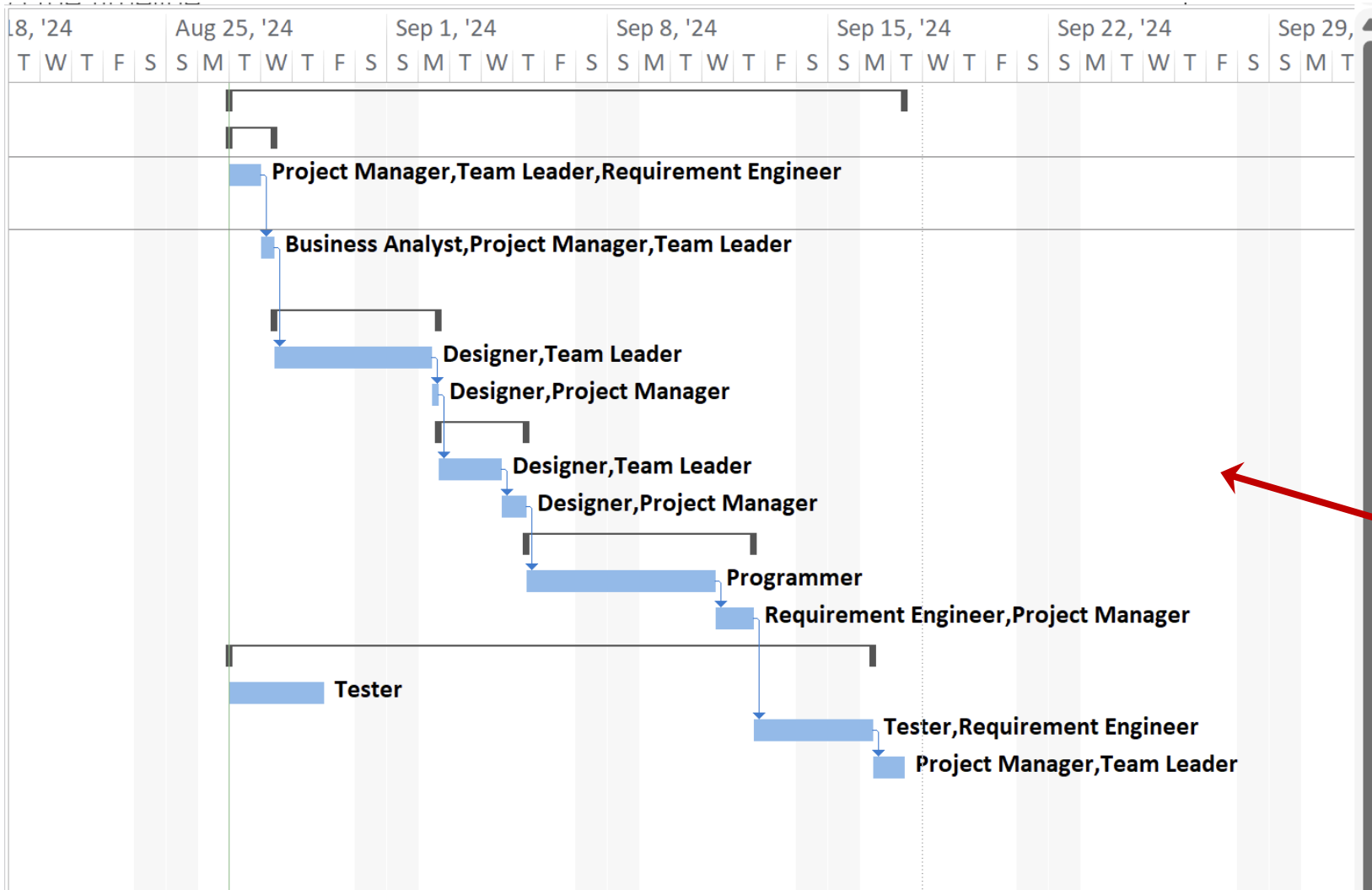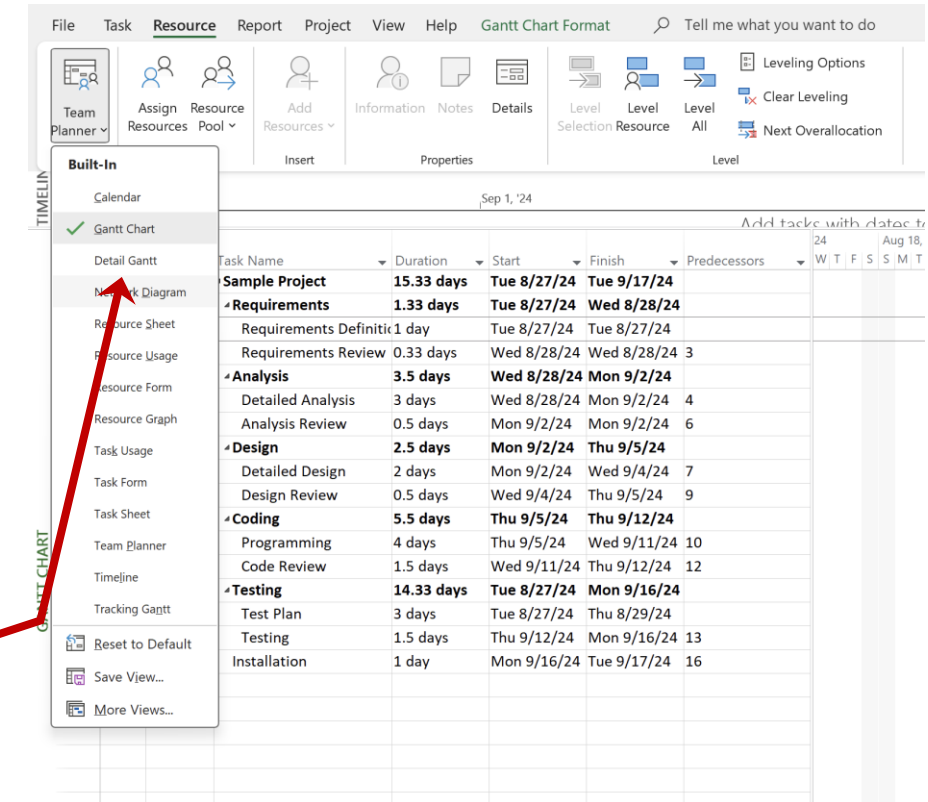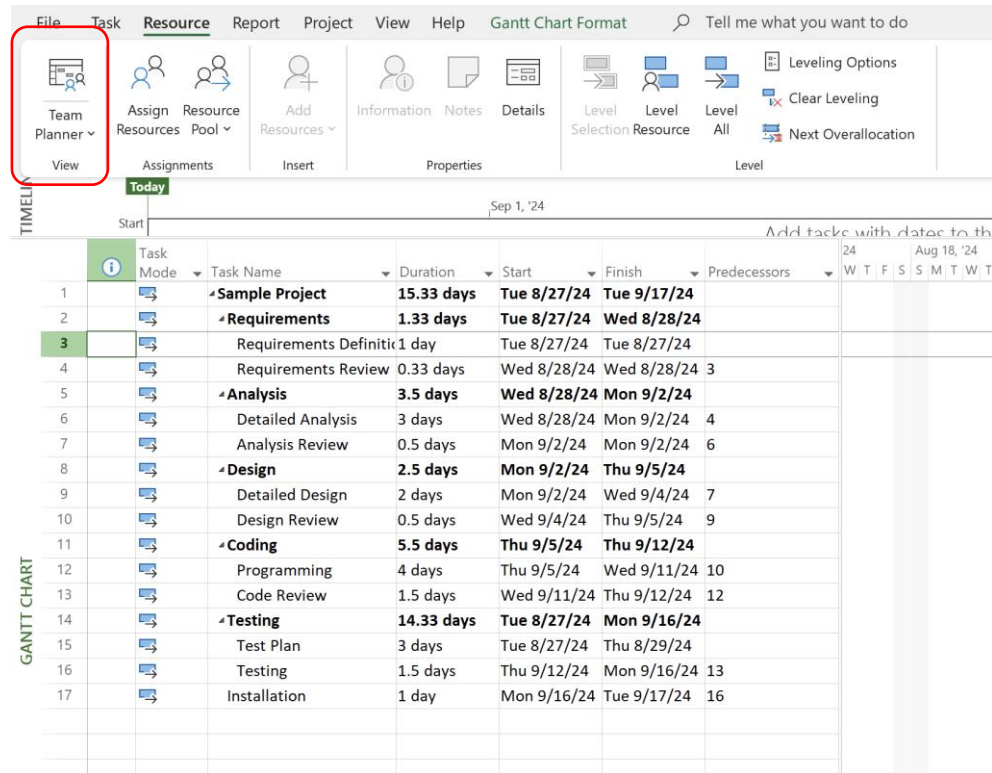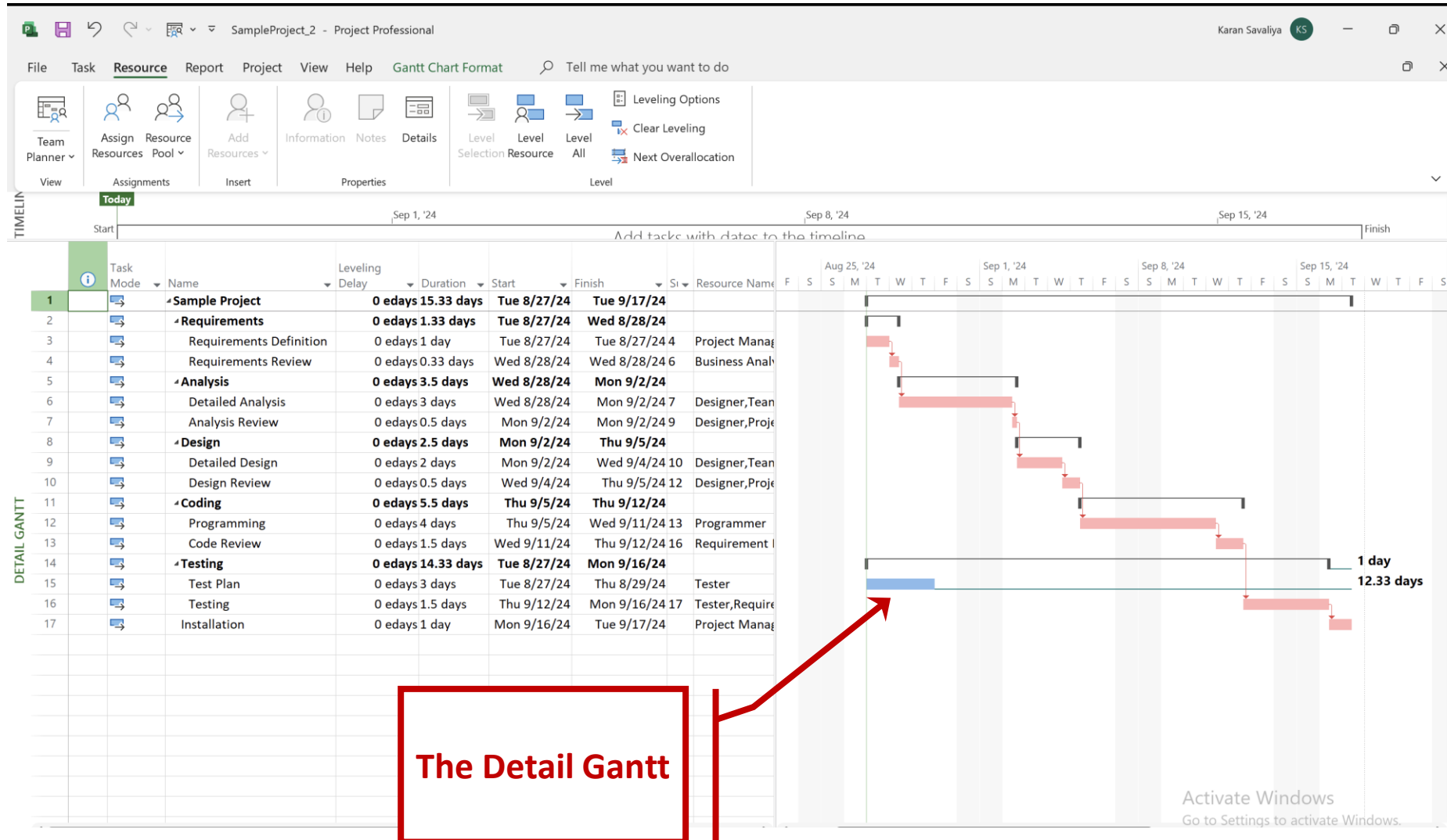
Gantt Chart

Viewing The Critical Path

- To see the critical path, click on View tab and then click on the **_"Detail Gantt"_**
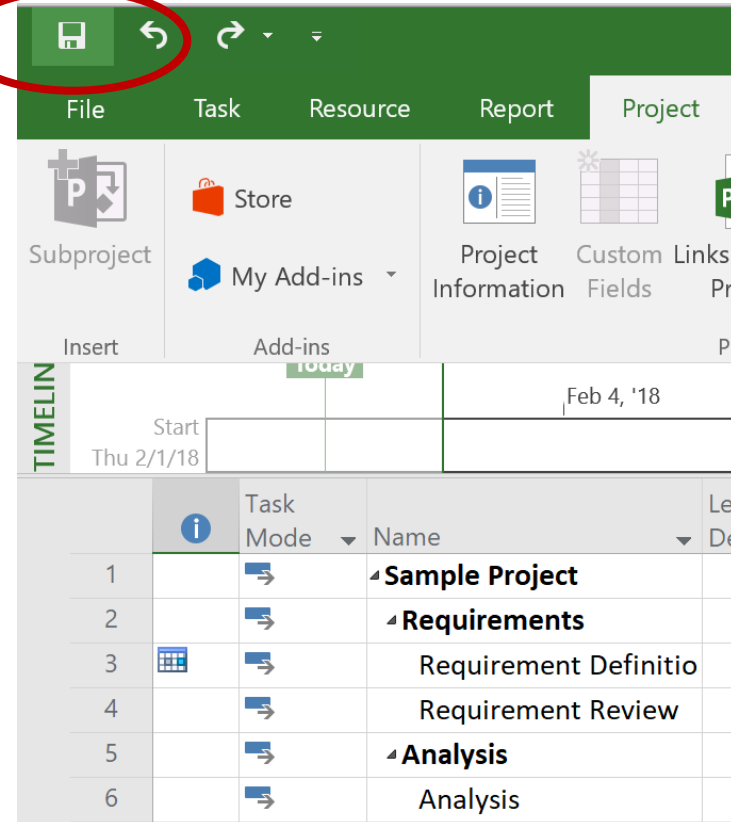

Select "Detail Gantt" from Gantt Chart

Detail Gantt

Step 7: Save the Project

For this example, we are saving the file at the end, but it is recommended that you save the file frequently while you are working to avoid losing data as a result of problems such as a Power Failure for instance.

Save the Project

NOTE:

Microsoft Project Schedules

- Microsoft Project schedules each task according to the formula:

  Effort = Amount of work/Productivity Rate

  Duration = Effort/No. of resources

- Duration is the actual amount of time that passes before the task is done.

- Amount of work is the total work required to be done.

- Resource effort is the amount of effort of all the resources that are assigned to the task.

- Effort of each resource is measured by productivity rate.

- Productivity rate is the total amount of output in a given time period.

Example

1. Let Work = 3000 SLOC

2. Effort will be calculated as:

$$\textbf{Work/Productivity Rate} = \frac{3000}{100 \text{ SLOC/day}}$$

$$= 30 \text{ days/1 Head Count}$$

3. Duration will be calculated as:

Effort/# Head Count = 30 days/1 HC

duration will be 30 days for 1 HC

or, for 2 Head Counts it will be

= 30 days/2 HC

= 15 days.

Questions ?