MS Project Professional 2021

Tutorial #2 - Demo

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

-Presentation by

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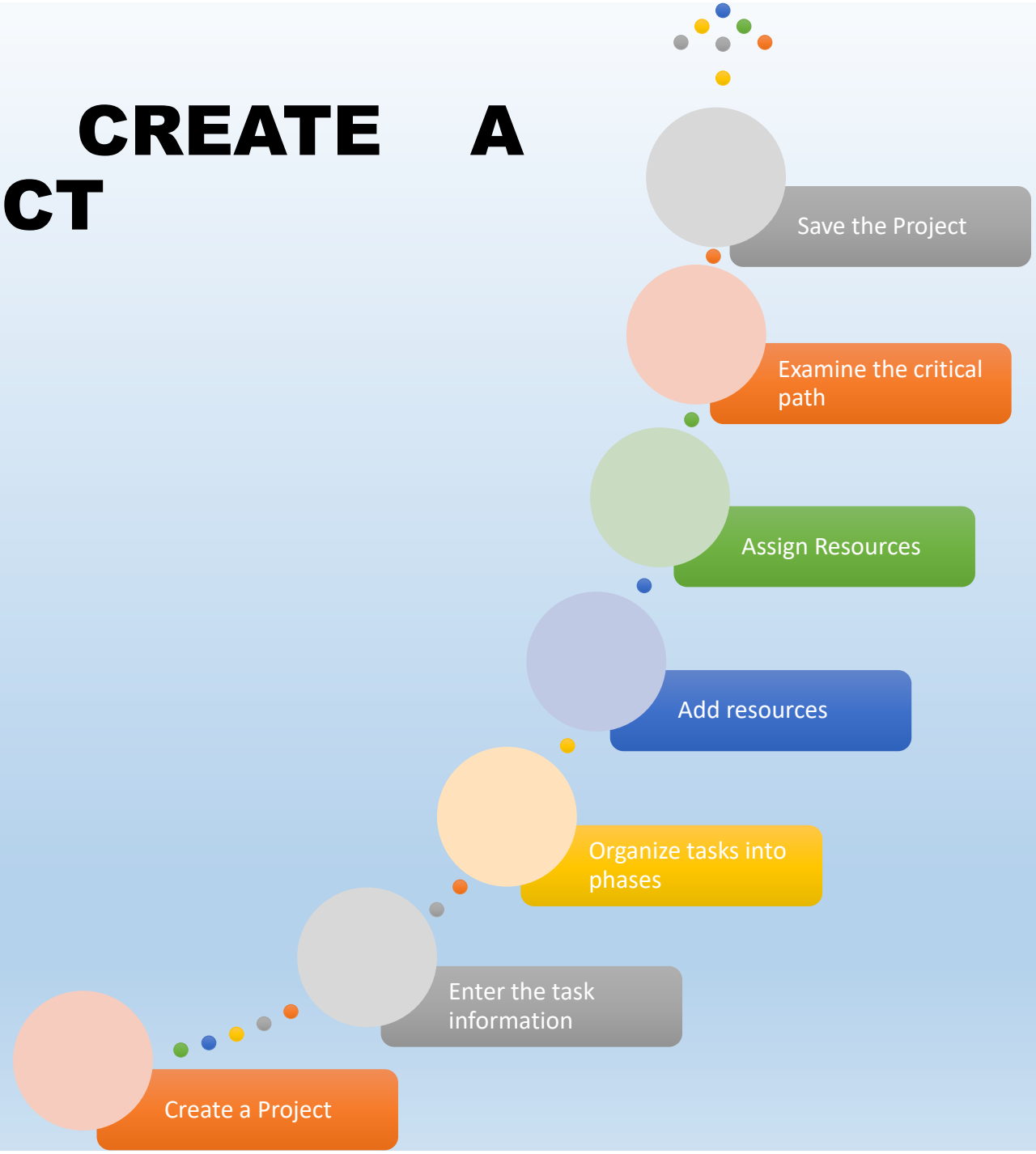
Develop the Following Development Project

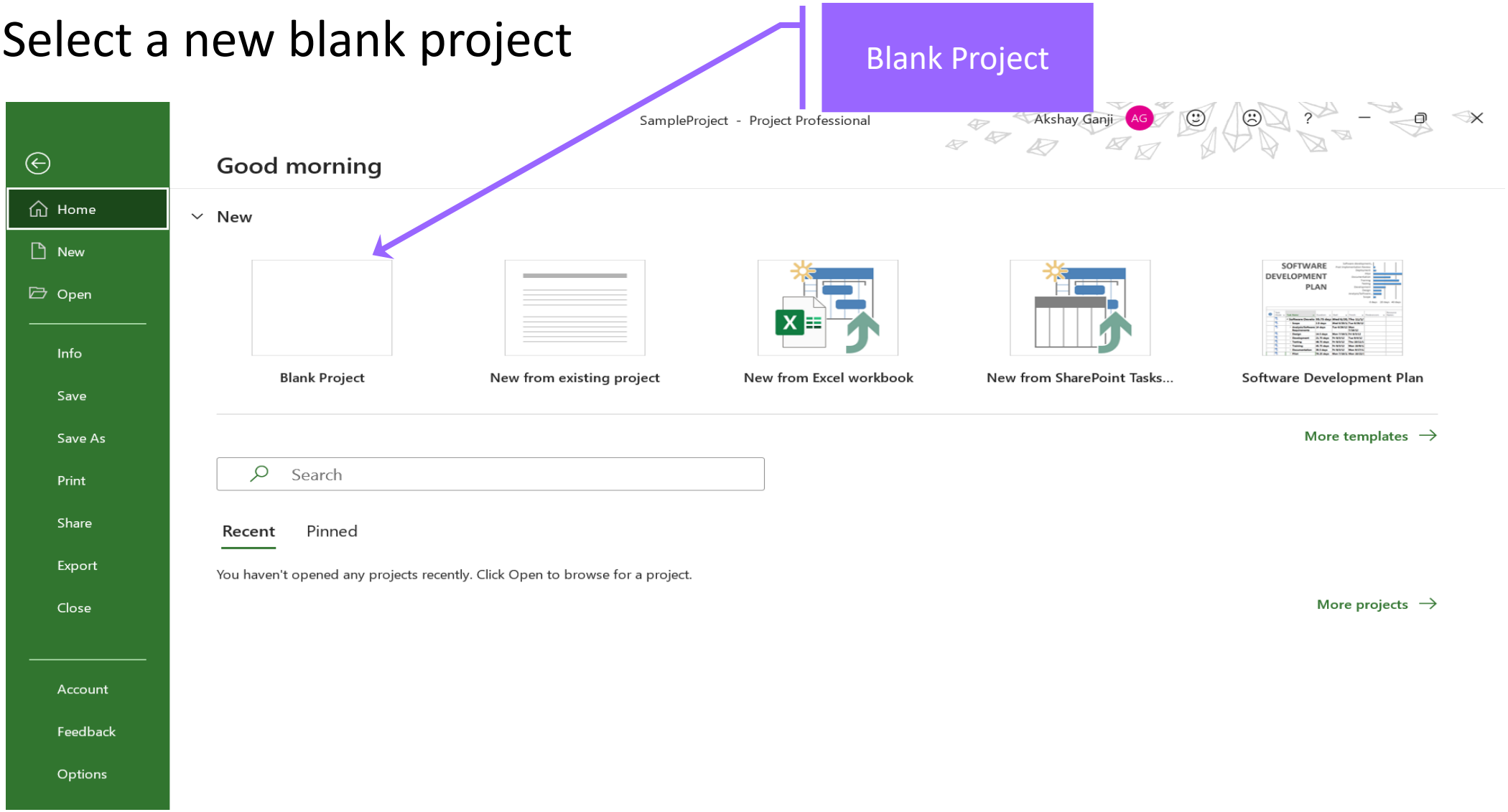
Activity	Predecessor	Human Resources	Duration
1. Requirement definition and analysis		•Requirement Engineer •Team Leader •Project Manager	3 Days
2. Requirement Review	1	•Business Analyst •Team Leader •Project Manager	1 Day
3. Analysis	2	•Designer •Team Leader	6 Days
4. Analysis Review	3	•Team Leader •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

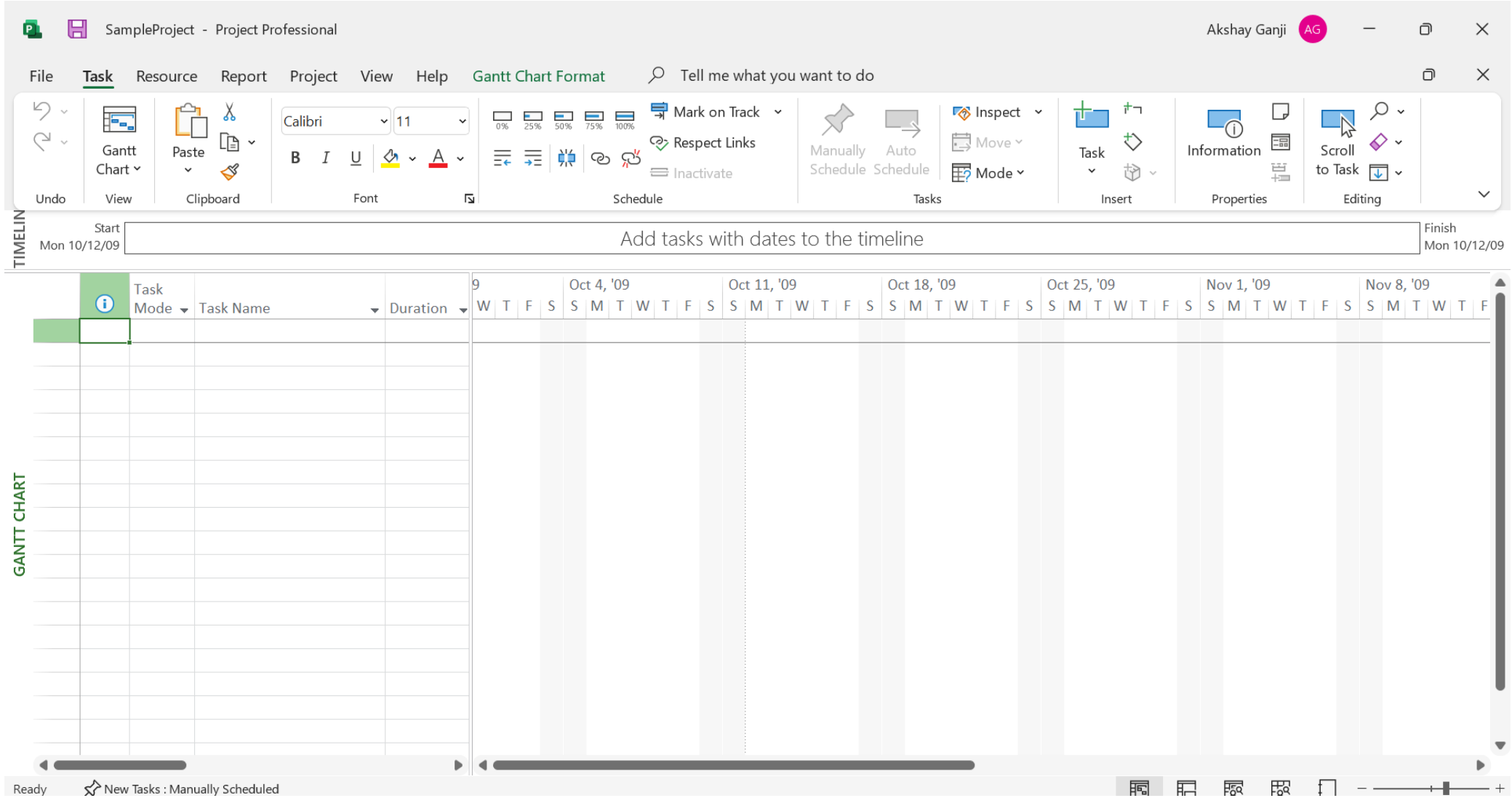


Step 1: Creating a new project

- 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)

➢ Entering Task Name, Duration and Predecessors

TIMELINE

Start Fri 1/21/22 | Sat Jan 22 | Sun Jan 23 | Mon Jan 24 | Tue Jan 25 | Wed Jan 26 | Thu Jan 27 | Fri Jan 28 | Sat Jan 29 | Sun Jan 30 | Mon Jan 31 | Tu

Add tasks with dates

GANTT CHART

		Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1			**Sample Project**	**15.33 days**	**Fri 1/21/22**	**Fri 2/11/22**		
2			**Requirements**	**1.33 days**	**Fri 1/21/22**	**Mon 1/24/22**		
3			Requirements Definition	1 day	Fri 1/21/22	Fri 1/21/22		Requirement Engineer,Project Manager, Team Leader
4			Requirements Review	0.33 days	Mon 1/24/22	Mon 1/24/22	3	Business Analyst,Project Manager, Team Leader
5			**Analysis**	**3.5 days**	**Mon 1/24/22**	**Thu 1/27/22**		
6			Detailed Analysis	3 days	Mon 1/24/22	Thu 1/27/22	4	Designer,Team Leader
7			Analysis Review	0.5 days	Thu 1/27/22	Thu 1/27/22	6	Designer,Project Manager
8			**Design**	**2.5 days**	**Thu 1/27/22**	**Tue 2/1/22**		
9			Detailed Design	2 days	Thu 1/27/22	Mon 1/31/22	7	Designer,Team Leader
10			Design Review	0.5 days	Mon 1/31/22	Tue 2/1/22	9	Designer,Project Manager
11			**Coding**	**5.5 days**	**Tue 2/1/22**	**Tue 2/8/22**		
12			Programming	4 days	Tue 2/1/22	Mon 2/7/22	10	Programmer
13			Code Review	1.5 days	Mon 2/7/22	Tue 2/8/22	12	Requirement Engineer,Project Manager
14			**Testing**	**14.33 days**	**Fri 1/21/22**	**Thu 2/10/22**		
15			Test Plan	3 days	Fri 1/21/22	Tue 1/25/22		Tester
16			Testing	1.5 days	Tue 2/8/22	Thu 2/10/22	13	Tester,Requirement Engineer
17			Installation	1 day	Thu 2/10/22	Fri 2/11/22	16	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

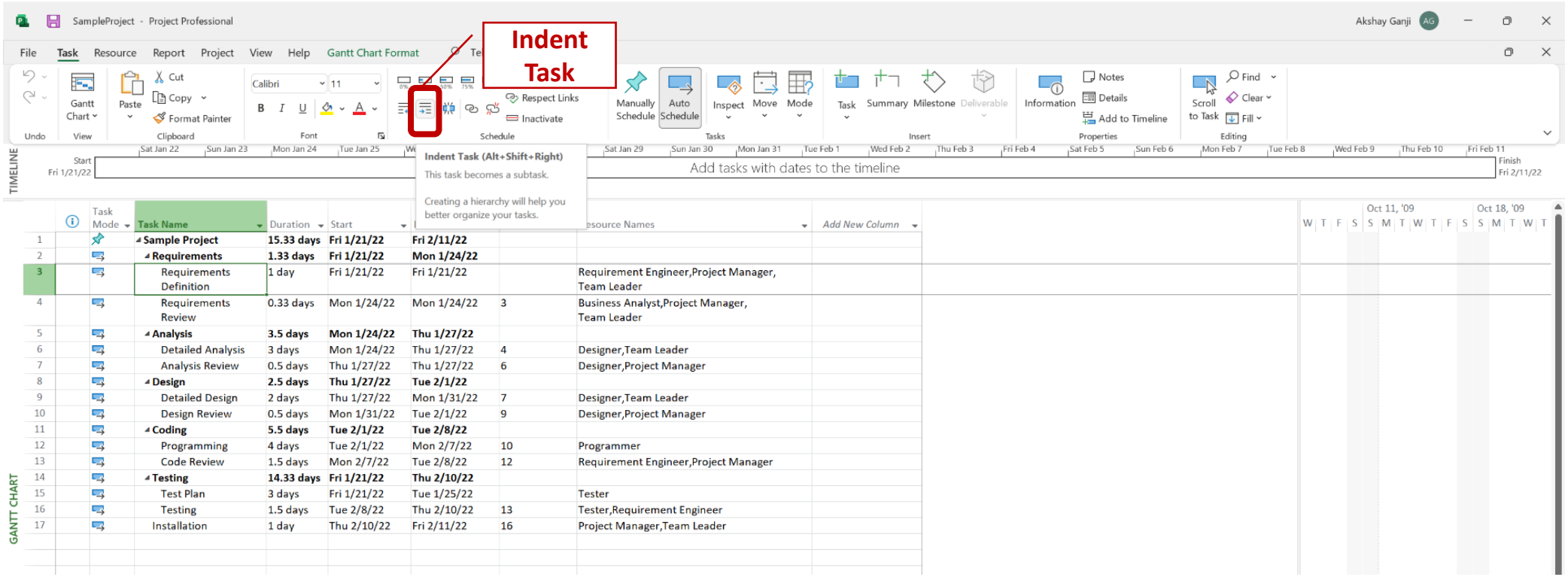
Step 3: Organize Tasks into Phases

- 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

TIMELINE

Start Fri 1/21/22 | Sat Jan 22 | Sun Jan 23 | Mon Jan 24 | Tue Jan 25 | Wed Jan 26 | Thu Jan 27 | Fri Jan 28 | Sat Jan 29 | Sun Jan 30 | Mon Jan 31 | Tu

Add tasks with dates

GANTT CHART

Summary Task

		Task Mode	Task Name	Start	Finish	Predecessors	Resource Names
1			**Sample Project**	**Fri 1/21/22**	**Fri 2/11/22**		
2			**Requirements**	**Fri 1/21/22**	**Mon 1/24/22**		
3			Requirements Definition	Fri 1/21/22	Fri 1/21/22		Requirement Engineer,Project Manager, Team Leader
4			Requirements Review	Mon 1/24/22	Mon 1/24/22	3	Business Analyst,Project Manager, Team Leader
5			**Analysis**	**Mon 1/24/22**	**Thu 1/27/22**		
6			Detailed Analysis	Mon 1/24/22	Thu 1/27/22	4	Designer,Team Leader
7			Analysis Review	Thu 1/27/22	Thu 1/27/22	6	Designer,Project Manager
8			**Design**	**Thu 1/27/22**	**Tue 2/1/22**		
9			Detailed Design	Thu 1/27/22	Mon 1/31/22	7	Designer,Team Leader
10			Design Review	Mon 1/31/22	Tue 2/1/22	9	Designer,Project Manager
11			**Coding**	**Tue 2/1/22**	**Tue 2/8/22**		
12			Programming	Tue 2/1/22	Mon 2/7/22	10	Programmer
13			Code Review	Mon 2/7/22	Tue 2/8/22	12	Requirement Engineer,Project Manager
14			**Testing**	**Fri 1/21/22**	**Thu 2/10/22**		
15			Test Plan	Fri 1/21/22	Tue 1/25/22		Tester
16			Testing	Tue 2/8/22	Thu 2/10/22	13	Tester,Requirement Engineer
17			Installation	Thu 2/10/22	Fri 2/11/22	16	Project Manager,Team Leader

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

TIMELINE

Start Fri 1/21/22

Sat Jan 22 | Sun Jan 23 | Mon Jan 24 | Tue Jan 25 | Wed Jan 26 | Thu Jan 27 | Fri Jan 28 | Sat Jan 29 | Sun Jan 30 | Mon Jan 31

Add tasks with dates

Sub-Task

		Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1			**Sample Project**	**15.33 days**	**Fri 1/21/22**	**Fri 2/11/22**		
2			**Requirements**	**1.33 days**	**Fri 1/21/22**	**Mon 1/24/22**		
3			Requirements Definition	1 day	Fri 1/21/22	Fri 1/21/22		Requirement Engineer,Project Manager, Team Leader
4			Requirements Review	0.33 days	Mon 1/24/22	Mon 1/24/22	3	Business Analyst,Project Manager, Team Leader
5			**Analysis**	**3.5 days**	**Mon 1/24/22**	**Thu 1/27/22**		
6			Detailed Analysis	3 days	Mon 1/24/22	Thu 1/27/22	4	Designer,Team Leader
7			Analysis Review	0.5 days	Thu 1/27/22	Thu 1/27/22	6	Designer,Project Manager
8			**Design**	**2.5 days**	**Thu 1/27/22**	**Tue 2/1/22**		
9			Detailed Design	2 days	Thu 1/27/22	Mon 1/31/22	7	Designer,Team Leader
10			Design Review	0.5 days	Mon 1/31/22	Tue 2/1/22	9	Designer,Project Manager
11			**Coding**	**5.5 days**	**Tue 2/1/22**	**Tue 2/8/22**		
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17			Installation	1 day	Thu 2/10/22	Fri 2/11/22	16	Project Manager,Team Leader

GANTT CHART

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”

SampleProject - Project Professional

Akshay Ganji

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

Gantt Chart | Task Usage | Network Diagram | Calendar | Other Views — Task Views

Team Planner | Resource Usage | Resource Sheet | Other Views — Resource Views

Sort | Outline | Tables | Highlight: [No Highlight] | Filter: [No Filter] | Group by: [No Group] — Data

Timescale: Days | Zoom | Entire Project | Selected Tasks — Zoom

Timeline | Details — Split View

New Window | Switch Windows | Arrange All | Hide — Window

Macros — Macros

TIMELINE

Start Fri 1/21/22 — Sat Jan 22, Sun Jan 23, Mon Jan 24, Tue Jan 25, Wed Jan 26, Thu Jan 27, Fri Jan 28, Sat Jan 29, Sun Jan 30, Mon Jan 31, Tue Feb 1, Wed Feb 2, Thu Feb 3, Fri Feb 4, Sat Feb 5, Sun Feb 6, Mon Feb 7, Tue Feb 8, Wed Feb 9, Thu Feb 10, Fri Feb 11 — Finish Fri 2/11/22

Add tasks with dates to the timeline

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base Calendar	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:

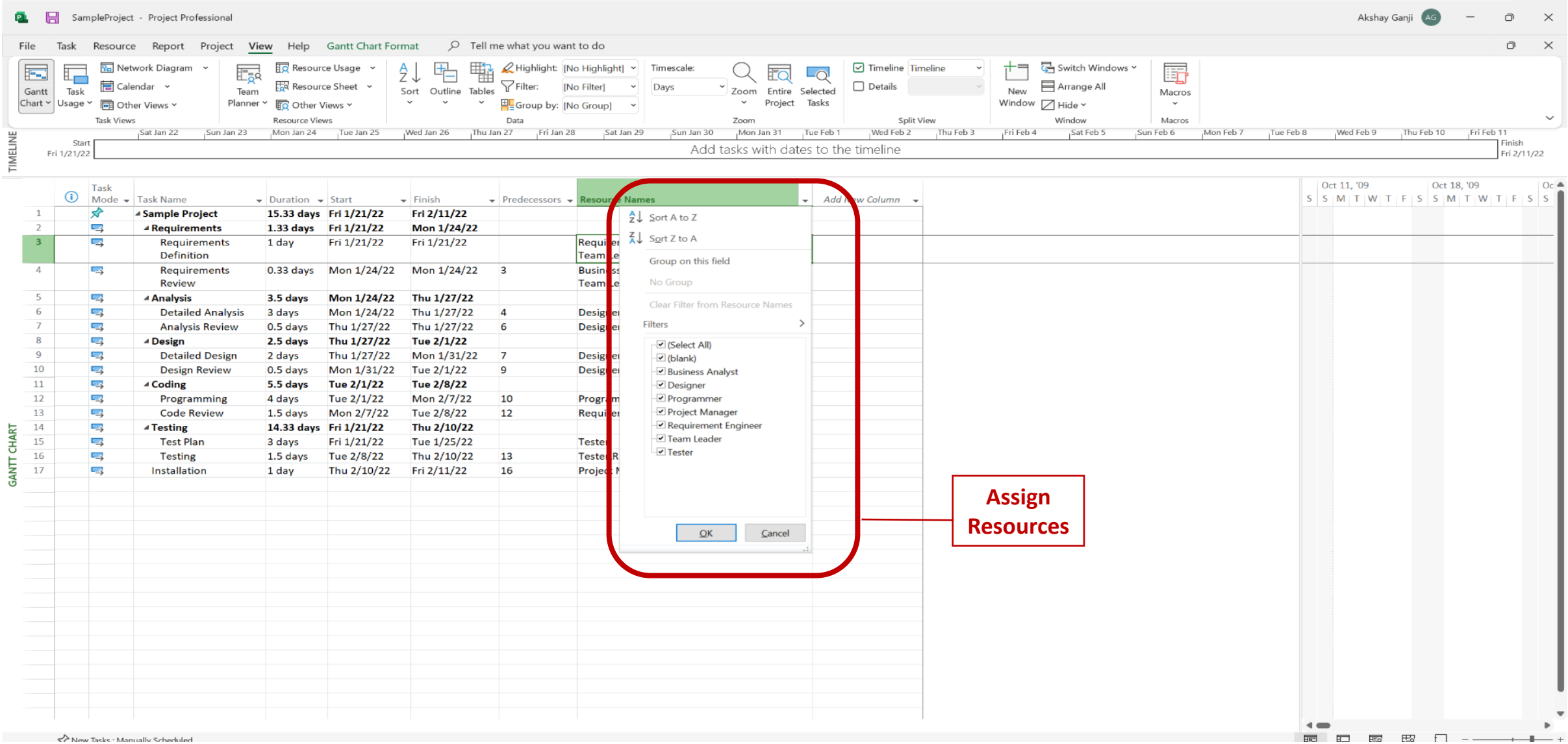
Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue
Requirement Engineer	Work		R		100%	$0.00/hr	$0.00/hr	$0.00	Prorated
Team Leader	Work		T		100%	$0.00/hr	$0.00/hr	$0.00	Prorated
Project Manager	Work		P		100%	$0.00/hr	$0.00/hr	$0.00	Prorated
Designer	Work		D		100%	$0.00/hr	$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

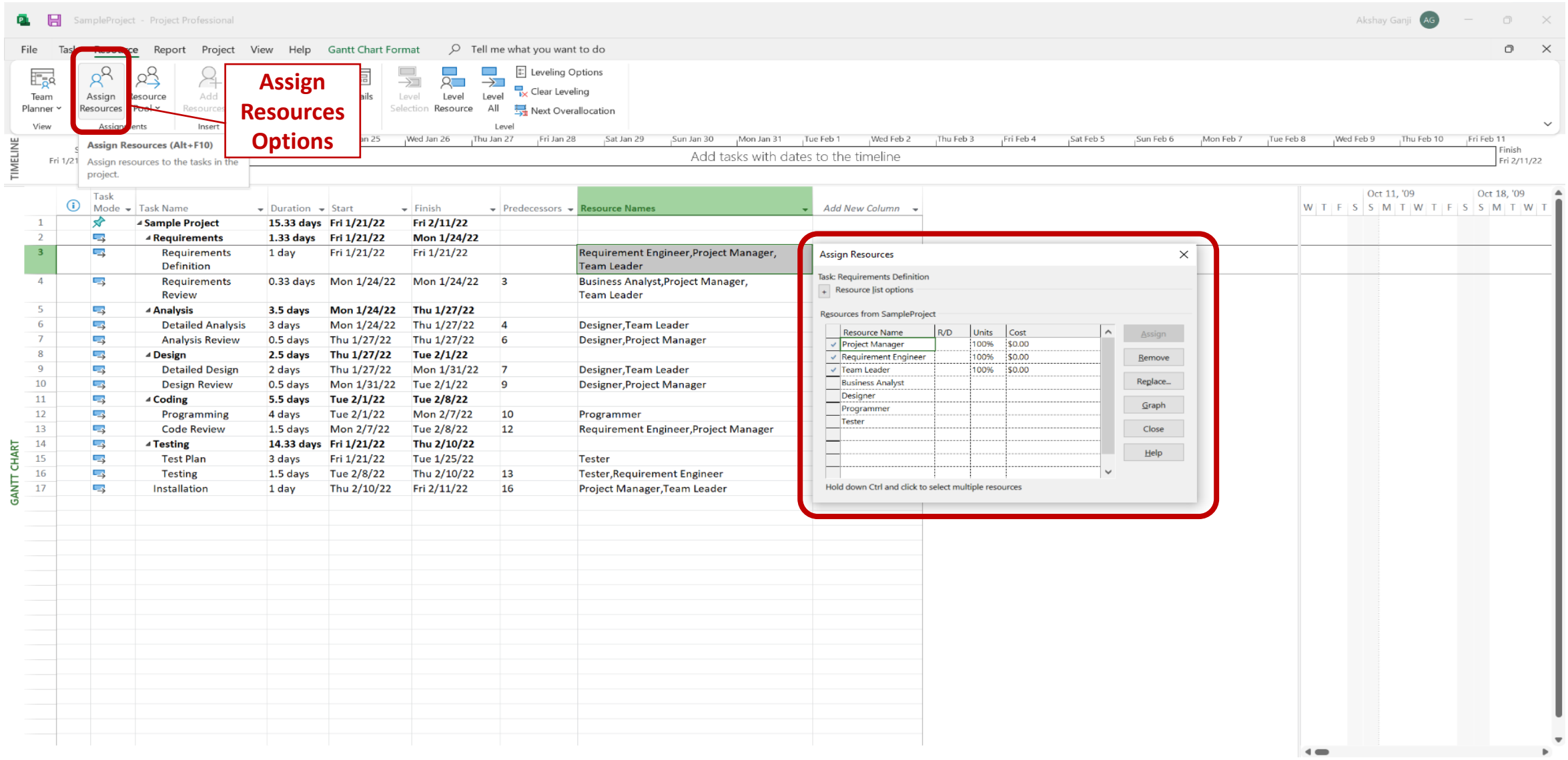
Step 5: Assign Resources

- 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



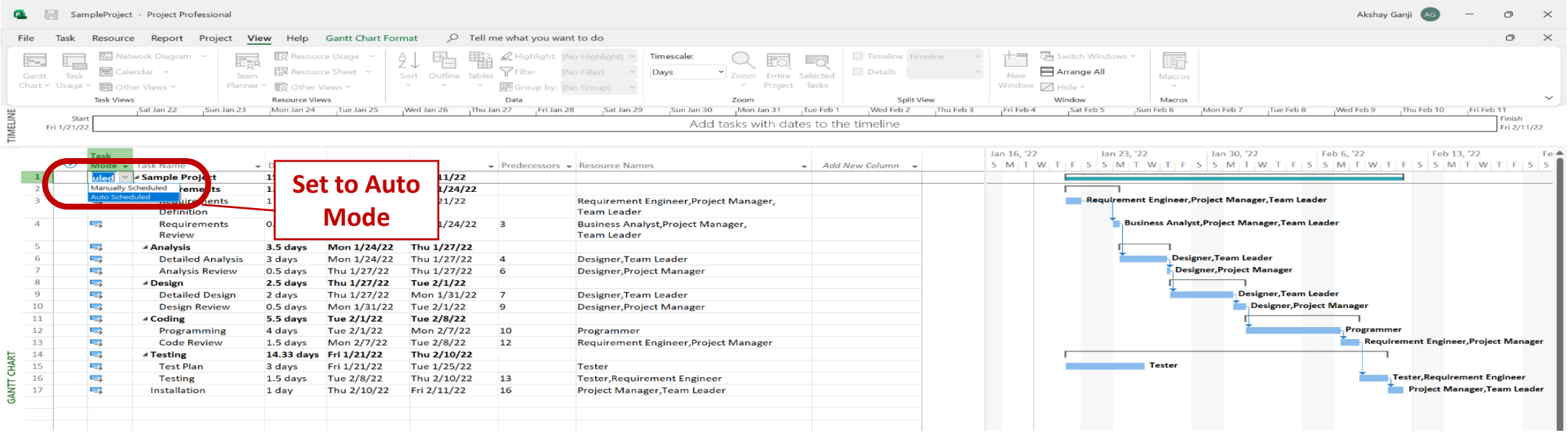
Method 2: Choosing “Assign Resources” option



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.

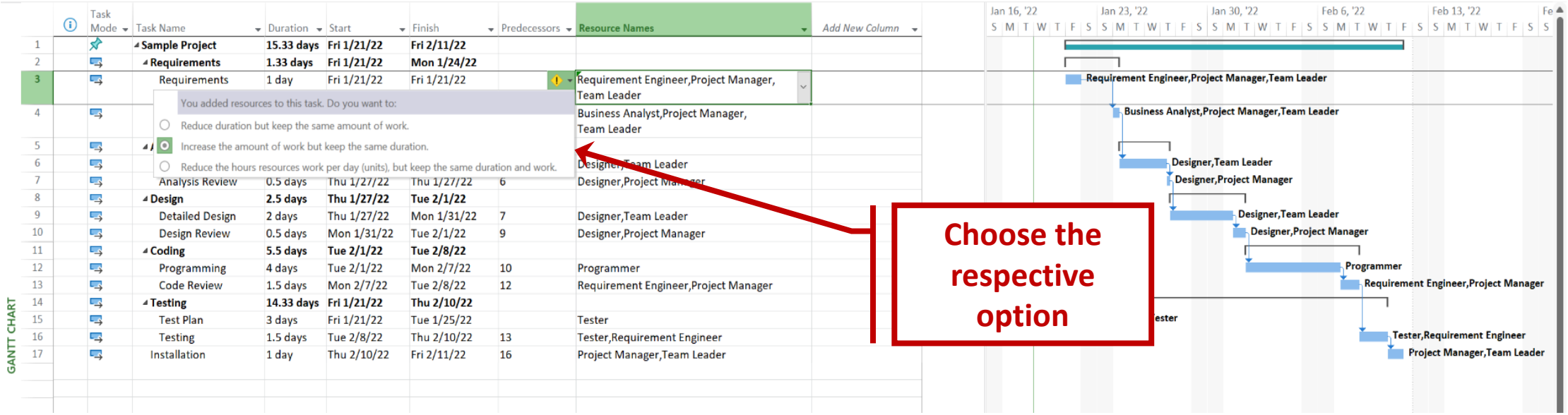


3. Assign the resources that you want to the task. Once you assign resources, you will see a yellow color warning sign on the left. Note that you will get this warning sign only if you assign 2 or more resources to the task.

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).

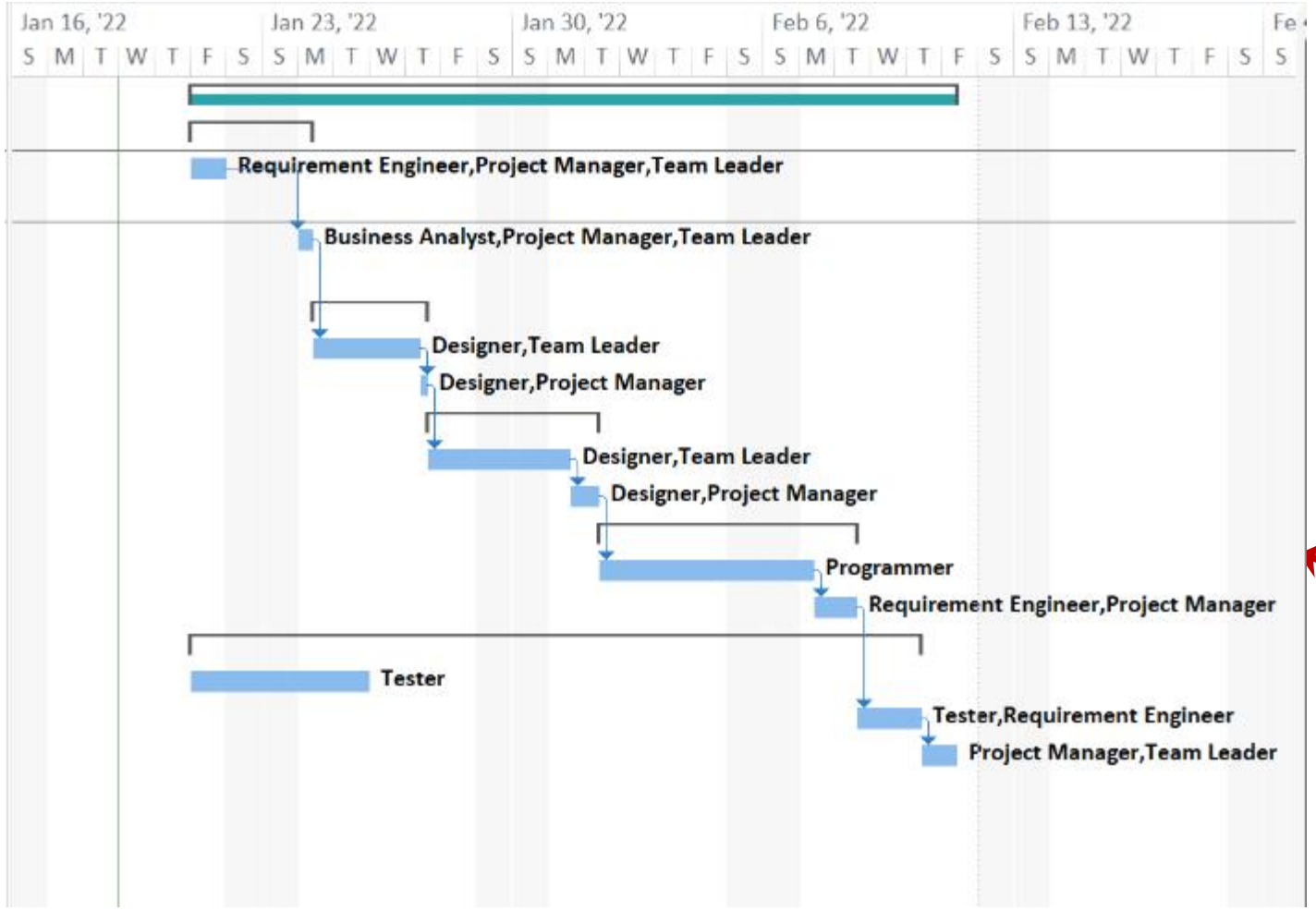
Step 6: Examine the critical Path

- 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)

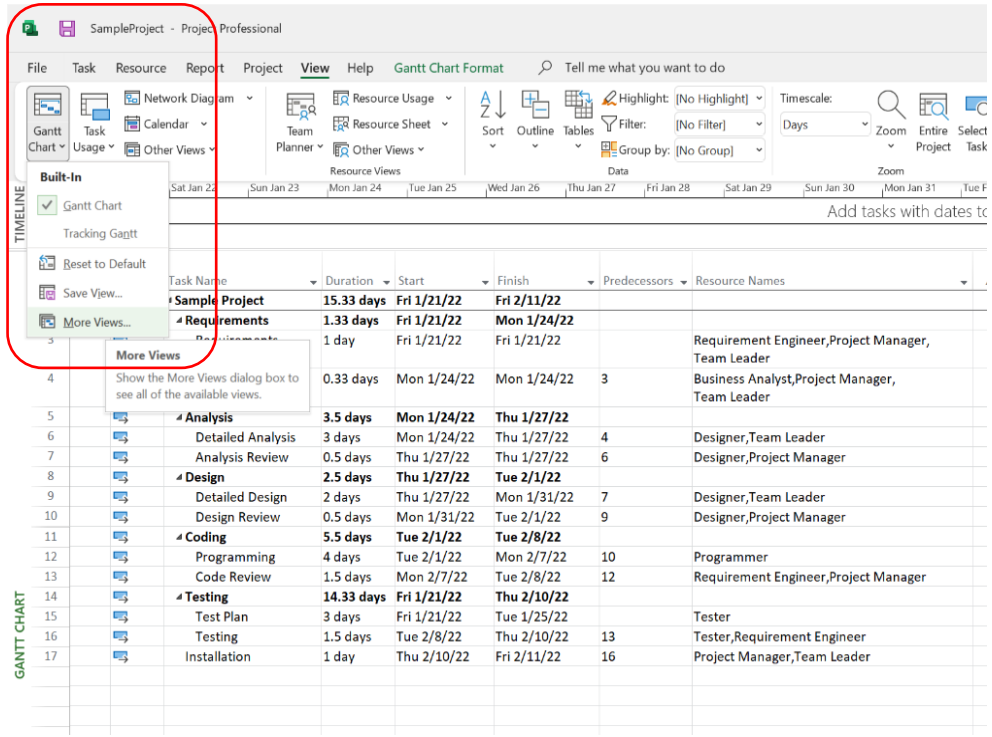
➢ Gantt Chart

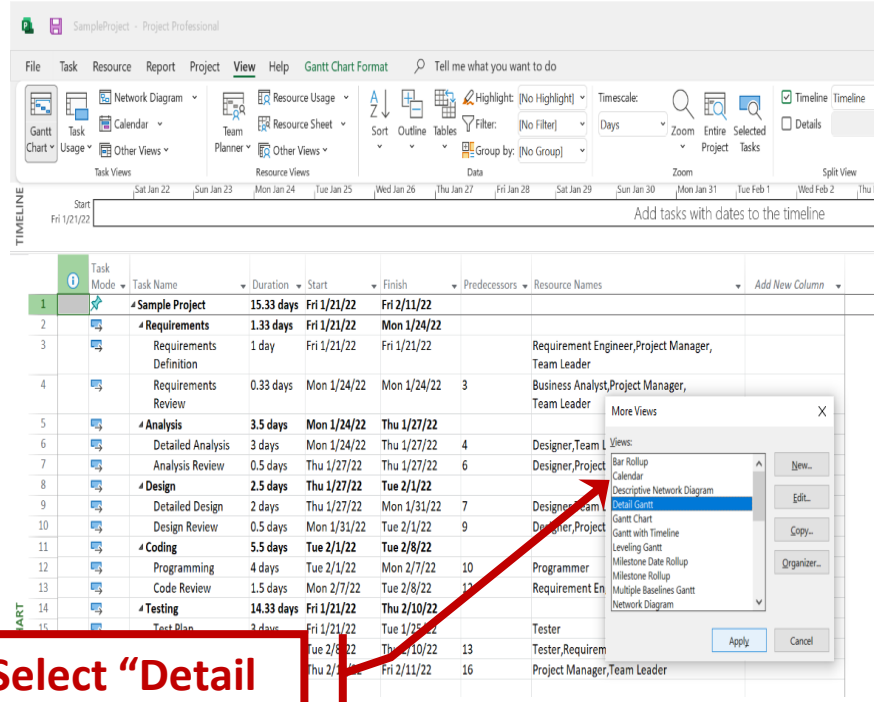


The Gantt Chart

Viewing The Critical Path

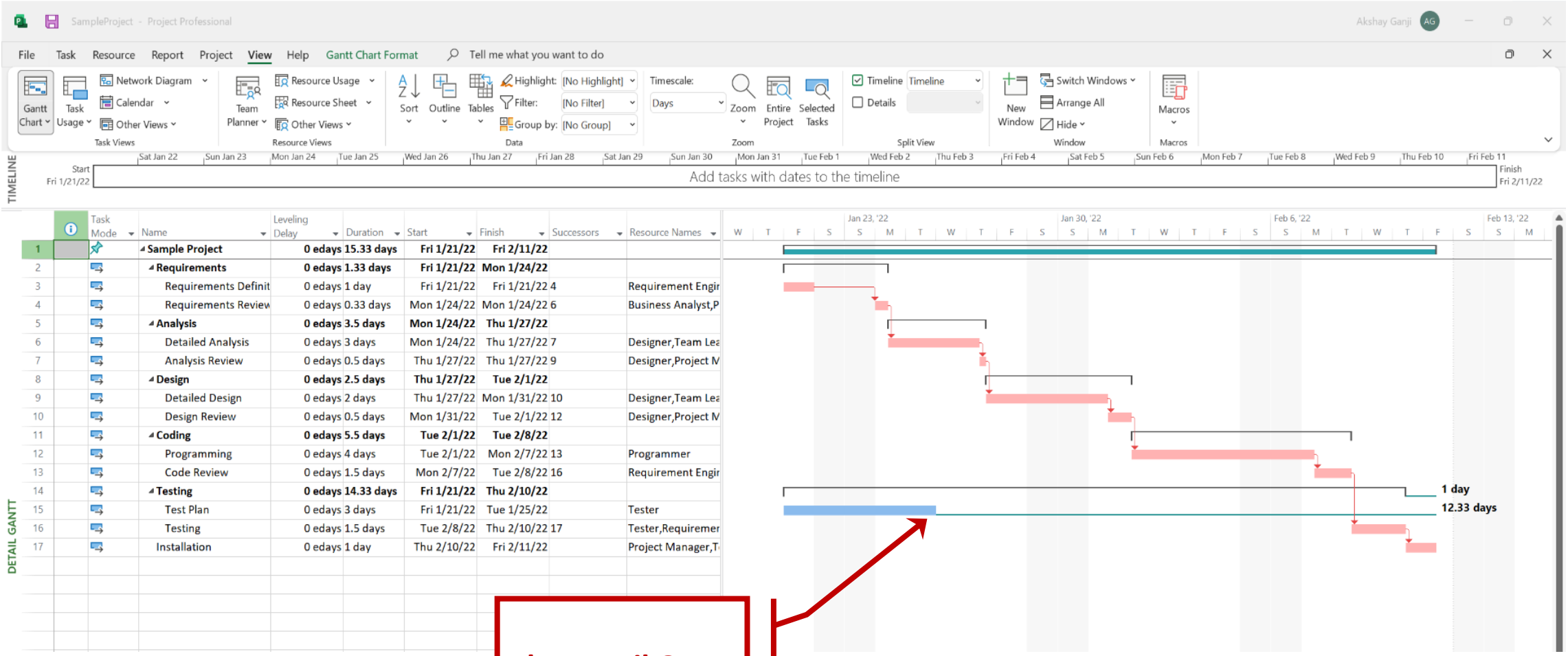
- To see the critical path, click on Gantt Chart, and select "More Views" to open up a pop-up. Here choose "Detail Gantt"





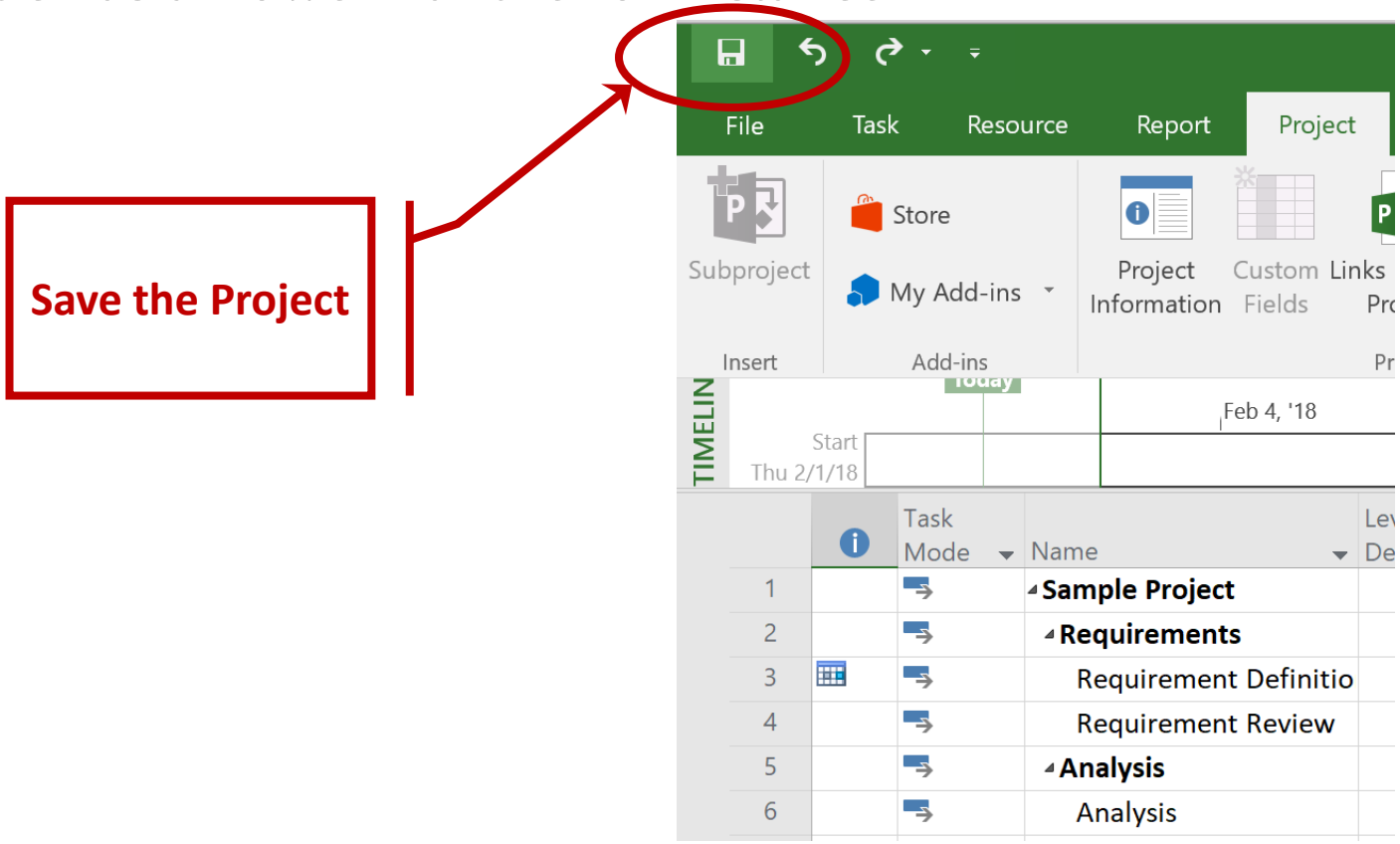
Select "Detail Gantt" from Gantt Chart

➢ 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



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:

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

= 30 days/1 Head Count

3. Duration will be calculated as:

Effort/# Head Count = 30days/1 HC

duration will be 30 days for 1 HC

or, for 2 Head Counts it will be

= 30days/2 HC

= 15 days.

Questions ?