

# **Advanced Software Project Management**

## **Practical File**



**AMITY SCHOOL OF ENGINEERING AND TECHNOLOGY**

**AMITY UNIVERSITY, SECTOR-125, NOIDA-201303**

# EXPERIMENT 1

**Date of Experiment:** 9<sup>th</sup> August 2022

**Date of Evaluation:** 16<sup>th</sup> August 2022

**Objective:** Introduction to MS Project 2007.

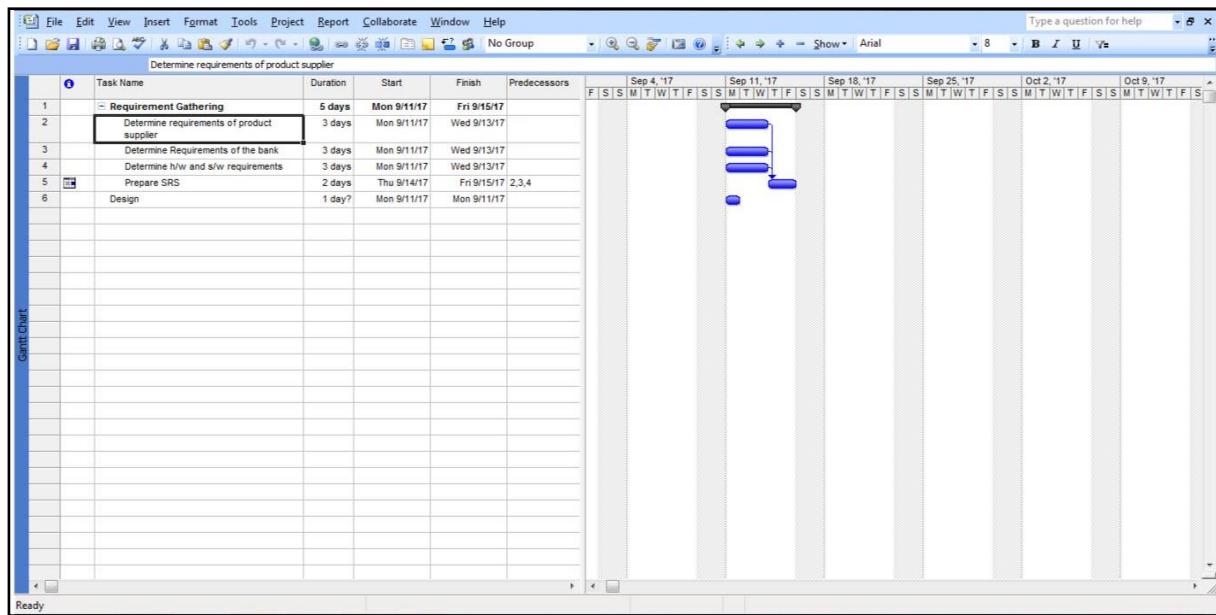
**Software used:** Microsoft Office Project 2007

## **Theory:**

**Microsoft Project** is a project management software program, developed and sold by Microsoft, which is designed to assist a project manager in developing a plan, assigning resources to tasks, tracking progress, managing the budget, and analysing workloads.

Microsoft Project was the company's third Microsoft Windows-based application, and within a couple of years of its introduction it became the dominant PC-based project management software.

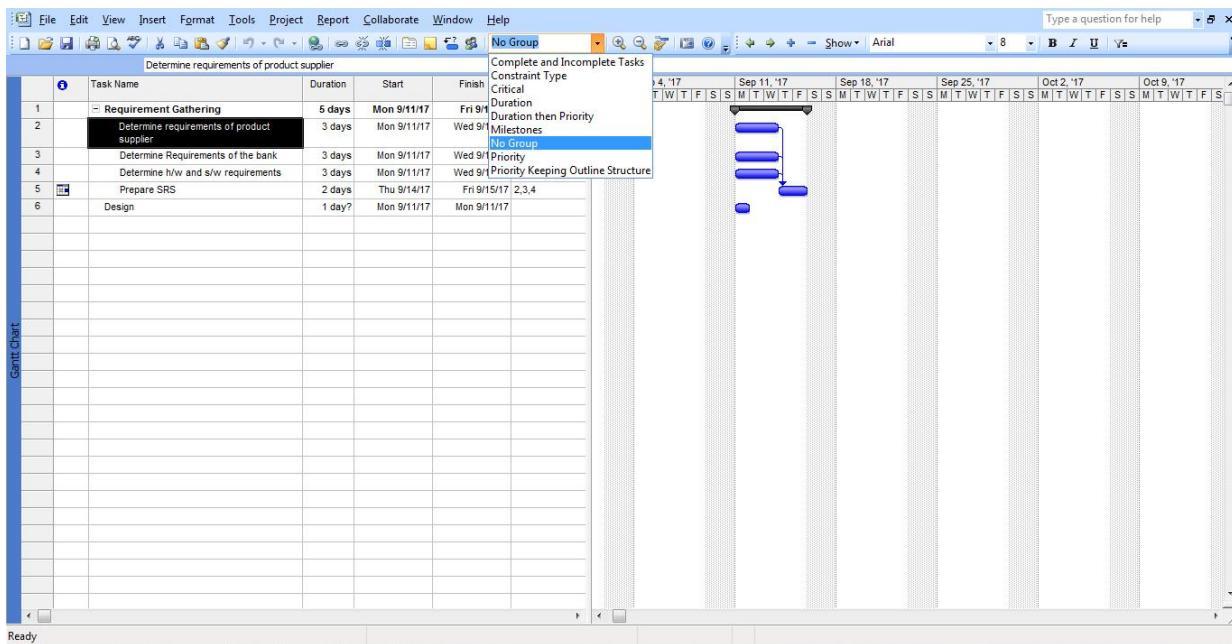
Microsoft Project and Microsoft Project Server are the cornerstones of the Microsoft Office Enterprise Project Management (EPM) product. Microsoft Project 2010 features the Ribbon user interface.



Resource definitions (people, equipment and materials) can be shared between projects using a shared resource pool. Each resource can have its own calendar which defines what days and shifts a resource is available. Resource rates are used to calculate resource assignment costs which are rolled up and summarized at the resource level.

Each resource can be assigned to multiple tasks in multiple plans and each task can be assigned multiple resources. Microsoft Project schedules task work based on the resource availability as defined in the resource calendars. All resources can be defined in an enterprise resource pool.

## Features



Project creates budgets based on assignment work and resource rates. As resources are assigned to tasks and assignment work estimated, the program calculates the cost, equal to the work times the rate, which rolls up to the task level and then to any summary tasks and finally to the project level. Resource definitions (people, equipment and materials) can be shared between projects using a shared resource pool. Each resource can have its own calendar, which defines what days and shifts a resource is available. Resource rates are used to calculate resource assignment costs which are rolled up and summarized at the resource level. Each resource can be assigned to multiple tasks in multiple plans and each task can be assigned multiple resources, and the application schedules task work based on the resource availability as defined in the resource calendars. All resources can be defined in label without limit. Therefore, it cannot determine how many finished products can be produced with a given amount of raw materials. This makes Microsoft Project unsuitable for solving problems of available materials constrained production. Additional software is necessary to manage a complex facility that produces physical goods.

## **Editions**

Project is available in two editions, Standard and Professional; both editions are available either as 32 or 64bit options. The Professional edition includes all the features of the Standard version, and additionally includes the features identified separately below.

### **New features in MS Project 2016:**

Project 2016 adds a new Reports section, backwards-compatibility with Project Server 2013, better integration with other Microsoft products, and improved appearance of user interface items:

#### **TIMELINE:**

Allows user to customize views to have multiple timeline bars and custom date ranges in a single view.

#### **RESOURCE AGREEMENTS:**

Gives features for resource planning coordination between Project Manager and Resource Manager.

#### **OFFICE 2016 STYLE THEME AND HELP:**

Uses the new Office query 'tell me what you want to do'.

#### **BACKWARDS COMPATIBILITY WITH MICROSOFT PROJECT SERVER 2013:**

The transition of enterprises from one version to the next may be eased by this product being able to interact with the earlier version of server.

**Result:** In this experiment, we have briefed about Microsoft Office Project.

## EXPERIMENT 2

**Date of Experiment:** 16<sup>th</sup> August 2022

**Date of Evaluation:** 29<sup>th</sup> August 2022

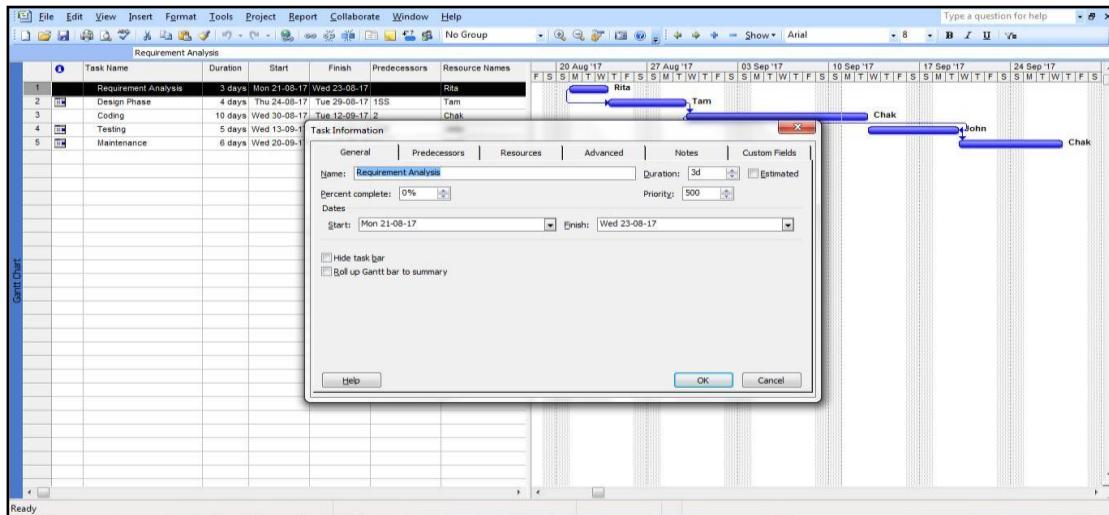
**Objective:** Create a MS Project application. Set the file property and set the project Calendar.

**Software used:** Microsoft Office Project 2007

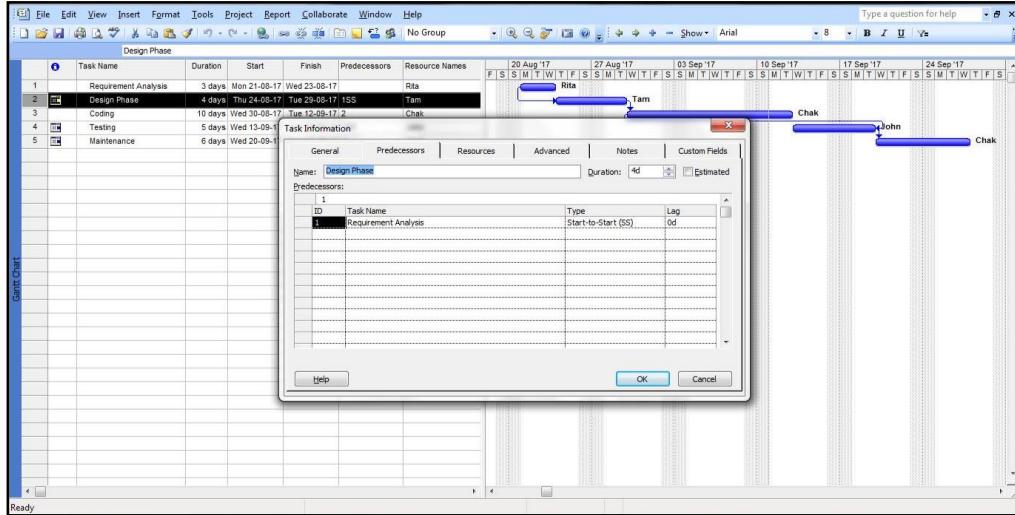
**Theory:** Steps to make a Microsoft Office application:

1. Click on Start menu, point to All Programs, click Microsoft Office, and then click MS Project 2007.
2. Create a new blank project in MS Project.
3. In the task sheet double click on the task number column.
4. A pop-up window will open. We can alter various aspects of the project by altering properties in this pop-up window. General task information, predecessor details, advanced properties etc all can be altered using this window. Give the properties of the task as follows:

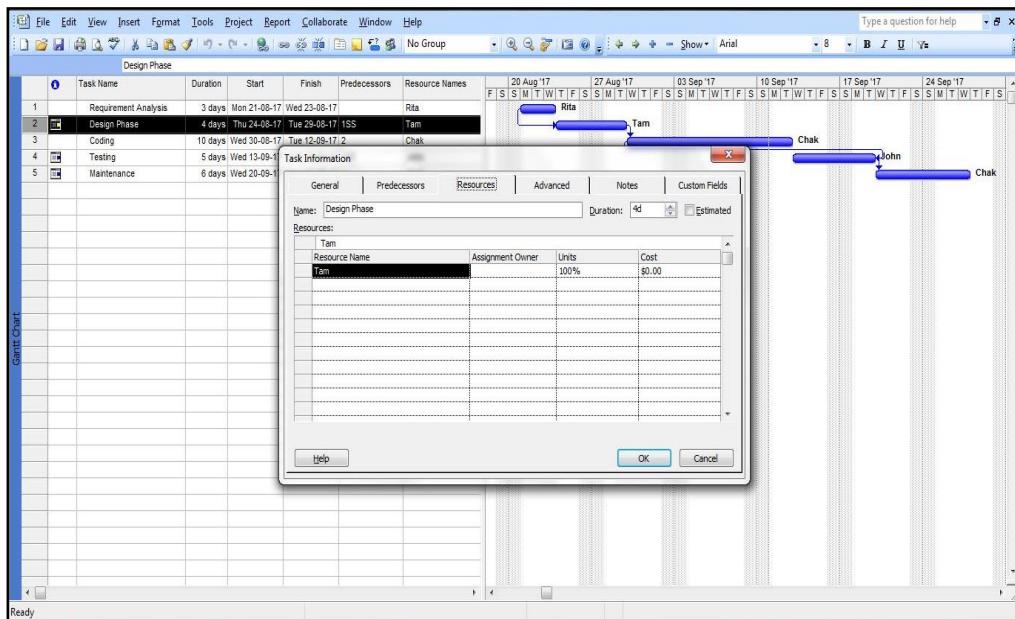
**1. General:** Give the name of the task, its duration, its start and end date, schedule mode etc in this tab.



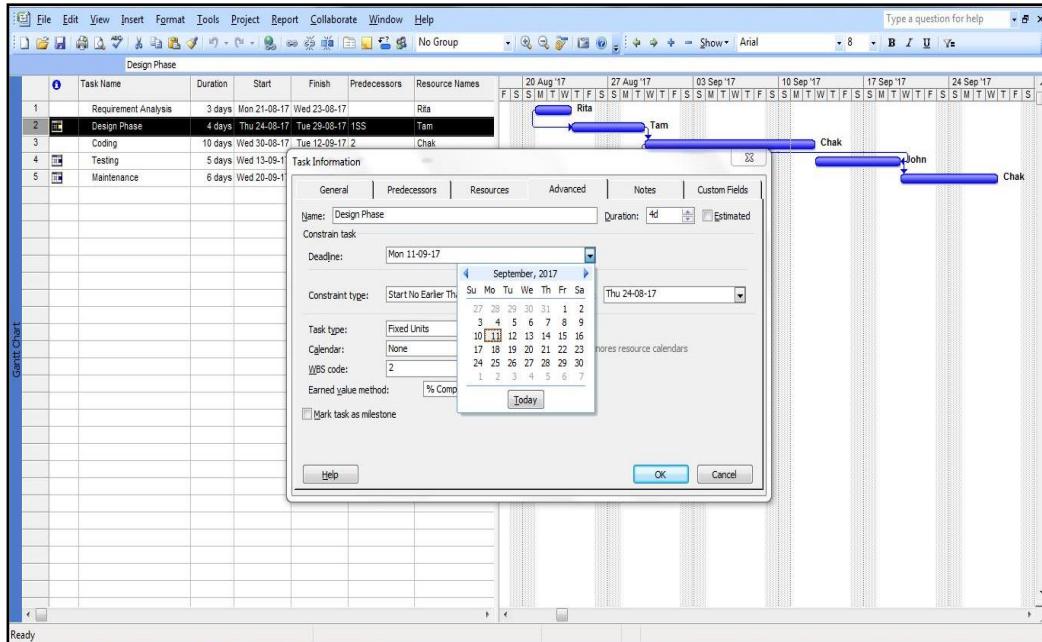
**2. Predecessor:** In this tab, which task should be held after which task or in which sequence the tasks would be executed is done. Open the Predecessor tab and make all the changes accordingly. Arrows will appear in the diagram according to your project sequence.



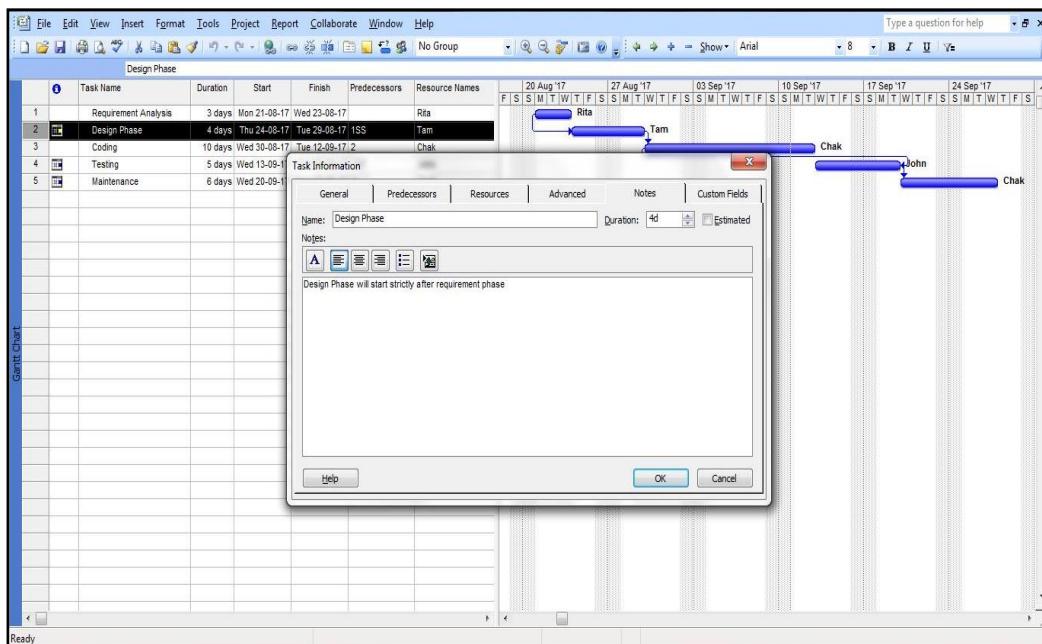
**3. Resources:** In this tab, details of the resources associated with the tasks are mentioned.



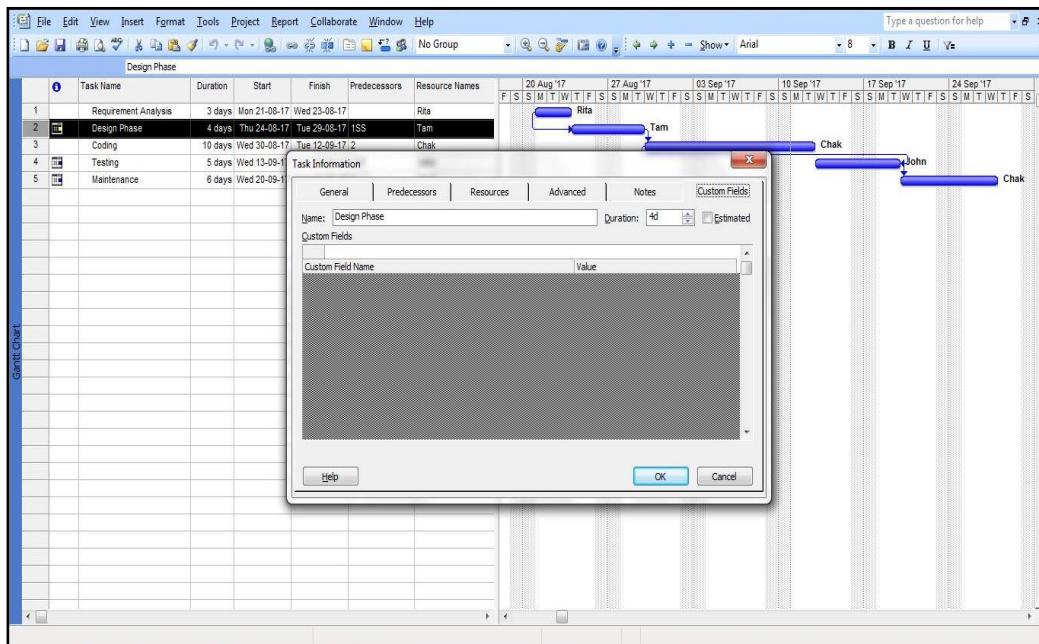
**4. Advanced:** This tab enables to provide some advanced features of the project such as: Deadline, Task type, Constraints etc.



**5. Notes:** You can provide notes to your tasks using this tab.



## **1. CUSTOM FIELDS:**



### **Result:**

In this experiment, we have created a MS Project application and set the file property and the project calendar.

# EXPERIMENT 3

**Date of Experiment:** 29<sup>th</sup> August 2022

**Date of Evaluation:** 5<sup>th</sup> September 2022

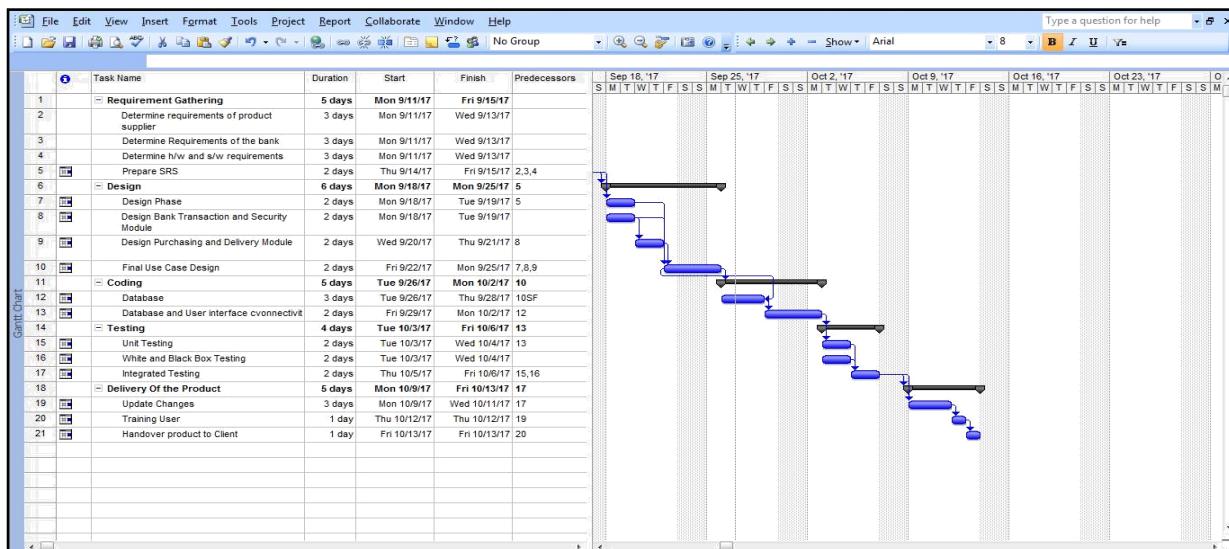
**Objective:** Draw the Gantt chart for the software project.

**Software used:** Microsoft Office Project 2007

## **Theory:**

Following are the steps to draw a Gantt chart for a project:

1. Create various tasks of the project after gathering and analysing all the requirements.
2. In each task, create some more tasks and indent them to make them sub tasks. Now, the completion of a task will be marked by completion of all its sub tasks.
3. Provide the sub tasks with their duration start and end dates and other attributes.
4. Using the predecessor property, link the sub tasks to each other and to the main tasks.
5. After setting all these properties, the Gantt chart is ready. Go to the view menu, click on the Gantt chart and the following view will be displayed



**Result:** In this experiment, we have drawn the Gantt chart for a project and the result is shown in screenshots.

# EXPERIMENT 4

**Date of Experiment:** 5<sup>th</sup> September 2022

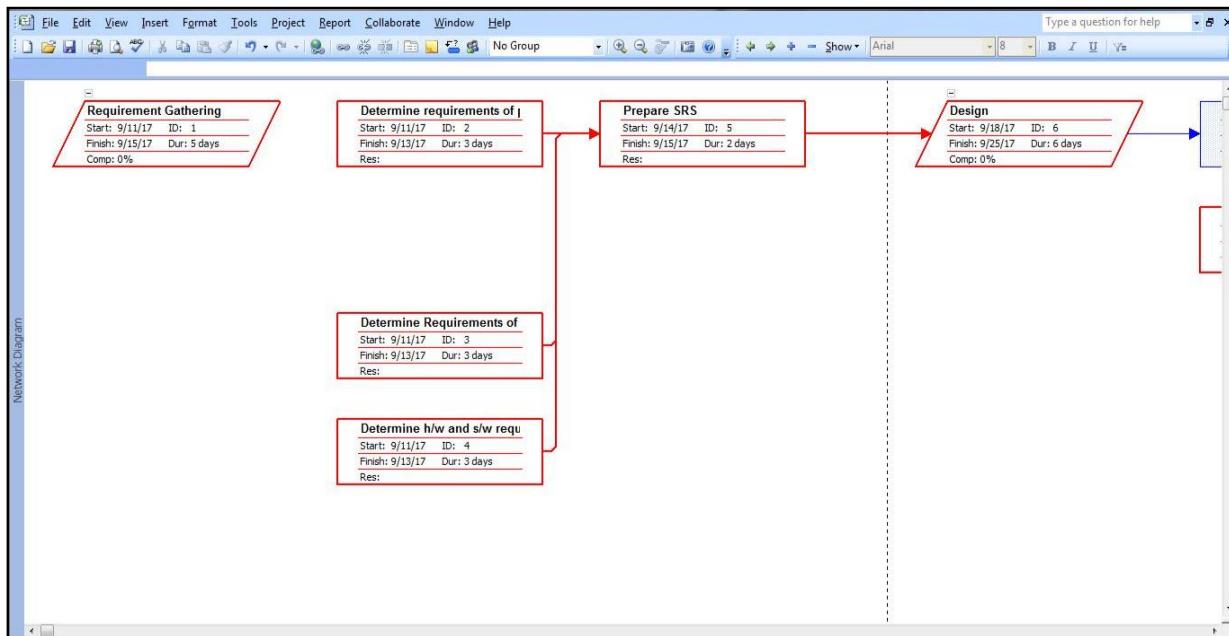
**Date of Evaluation:** 13<sup>th</sup> September 2022

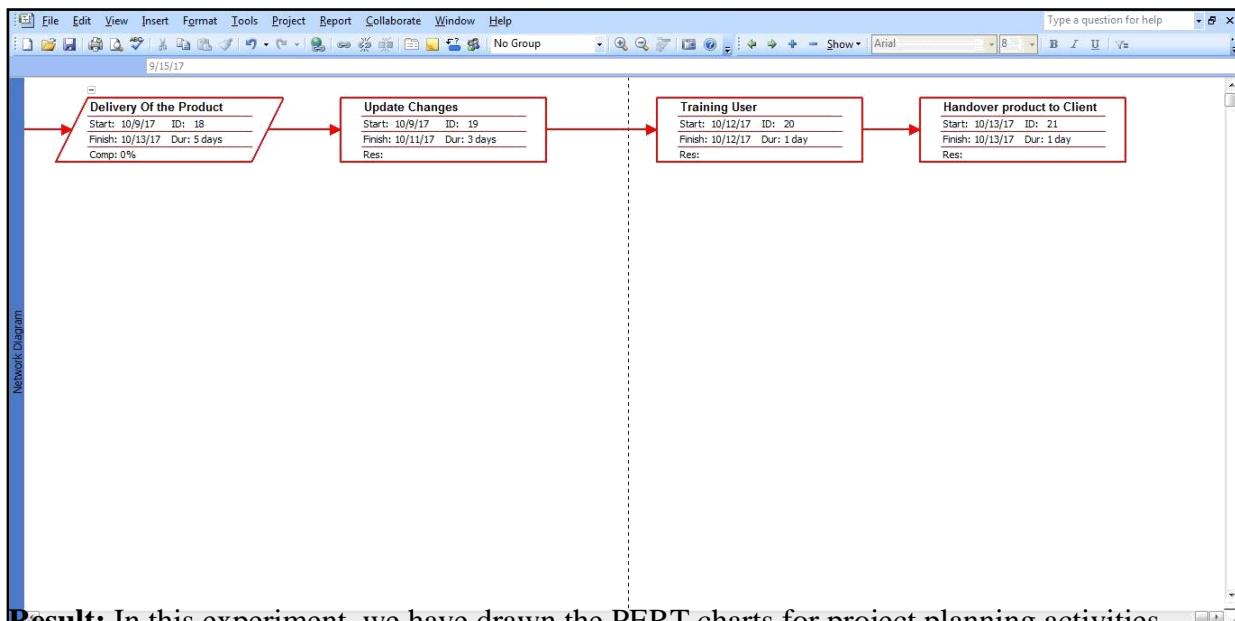
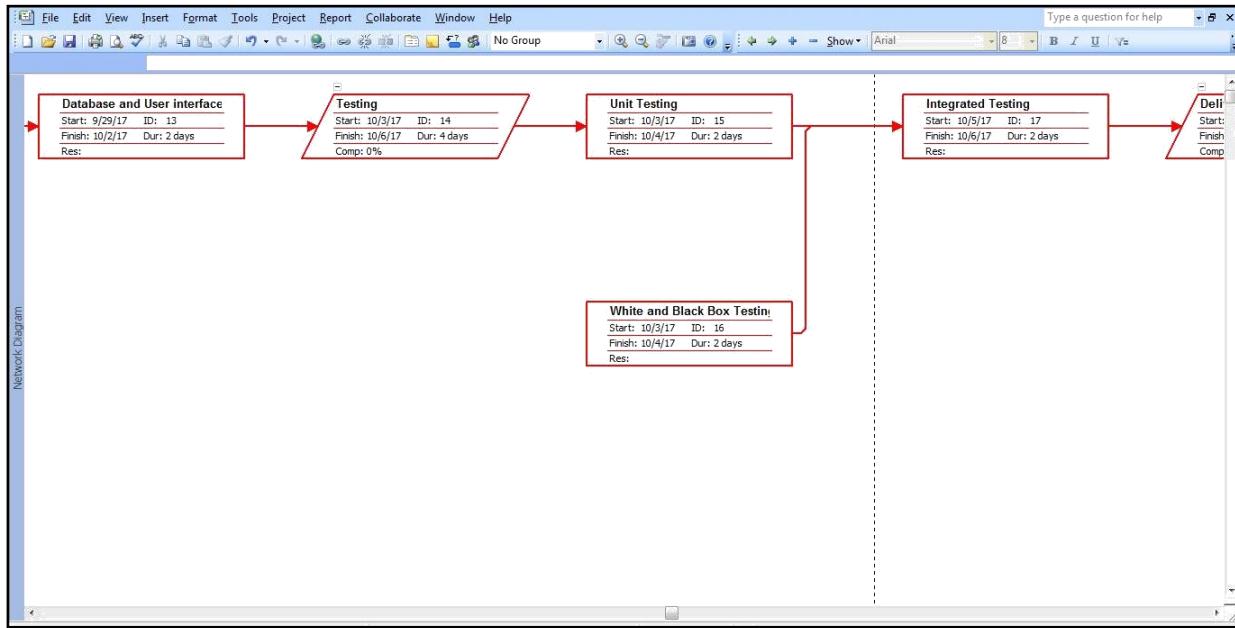
**Objective:** Using Project Planning Activities draw the PERT for the project.

**Software used:** Microsoft Office Project 2007

**Theory:** Steps to create a PERT chart are as follows:

1. Create various tasks of the project after gathering and analysing all the requirements.
2. In each task, create some more tasks and indent them to make them sub tasks. Now, the completion of a task will be marked by completion of all its sub tasks.
3. Provide the sub tasks with their duration start and end dates and other attributes.
4. Using the predecessor property, link the sub tasks to each other and to the main tasks.
5. Now that the PERT chart is ready, go to the view menu, click on the Network Diagram tab and the following PERT chart will be displayed.





**Result:** In this experiment, we have drawn the PERT charts for project planning activities and the result is shown in screenshots.

## **EXPERIMENT 5**

**Date of Experiment:** 13<sup>th</sup> September 2022

**Date of Evaluation:** 19<sup>th</sup> September 2022

**Objective:** To become familiar with the different functions concerning tasks.

**Software used:** Microsoft Office Project 2007

**Theory:** Begin the project by dividing the work into separate tasks. We will divide the film-making project into following pre-production tasks:

- ② Write the script (2 months)
- ② Call film commission (1 day)
- ② Storyboard (2 weeks)
- ② Develop budget (3 days)

And following production tasks:

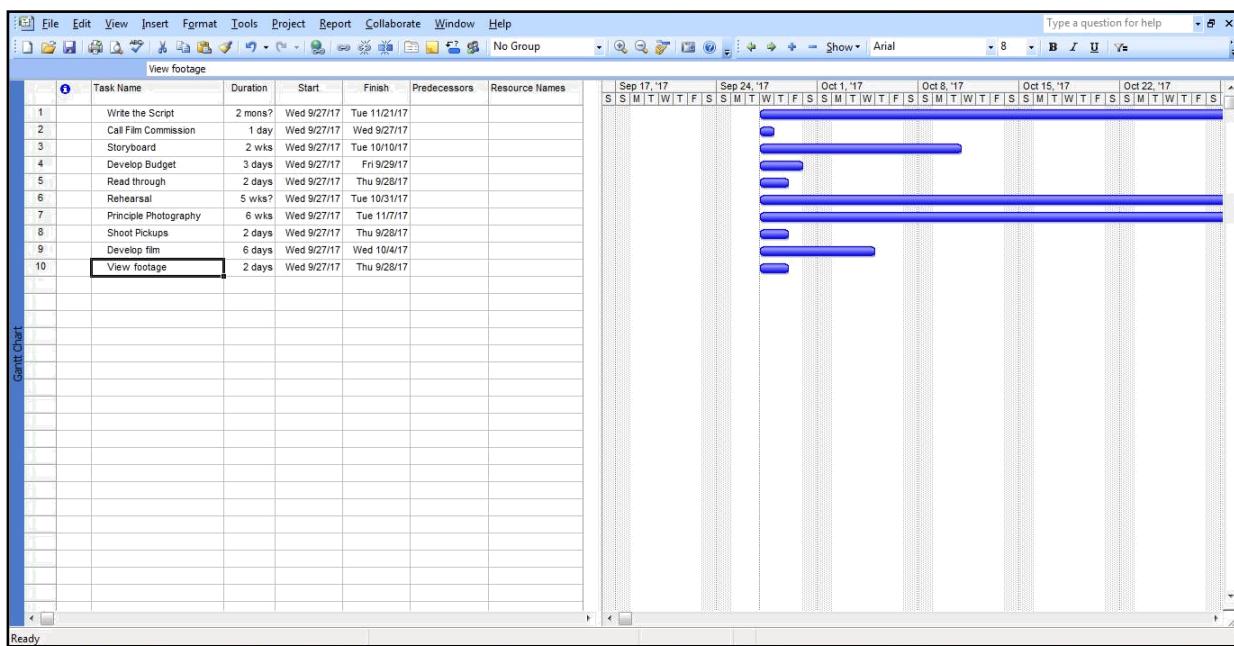
- ② Read through (2 days)
- ② Rehearsal (5 weeks)
- ② Principle photography (6 weeks)
- ② Shoot pickups (2 days)
- ② Develop film (6 days)
- ② View footage (2 days)

There are a range of functions concerning tasks and a variety of ways of going about them.

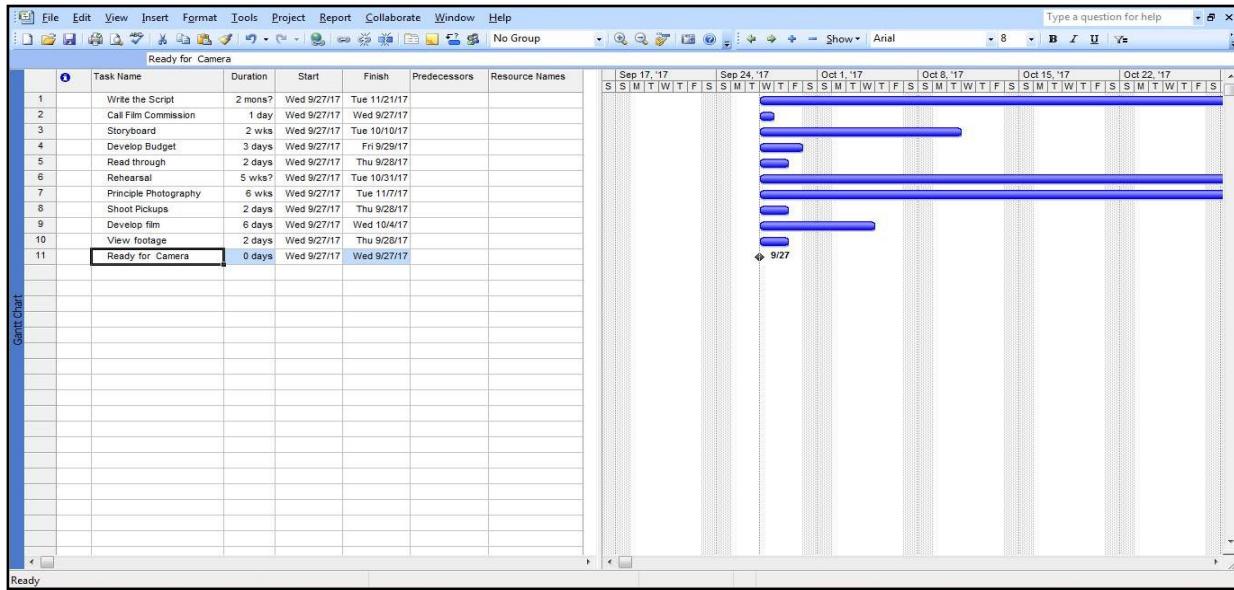
### **1. Inserting tasks:**

In the Gantt chart view, we can insert tasks into a project by typing them into the spreadsheet. The task name, duration, start date and end date can be given by typing in their respective columns or by double clicking on it to open a pop-up window named Task Information.

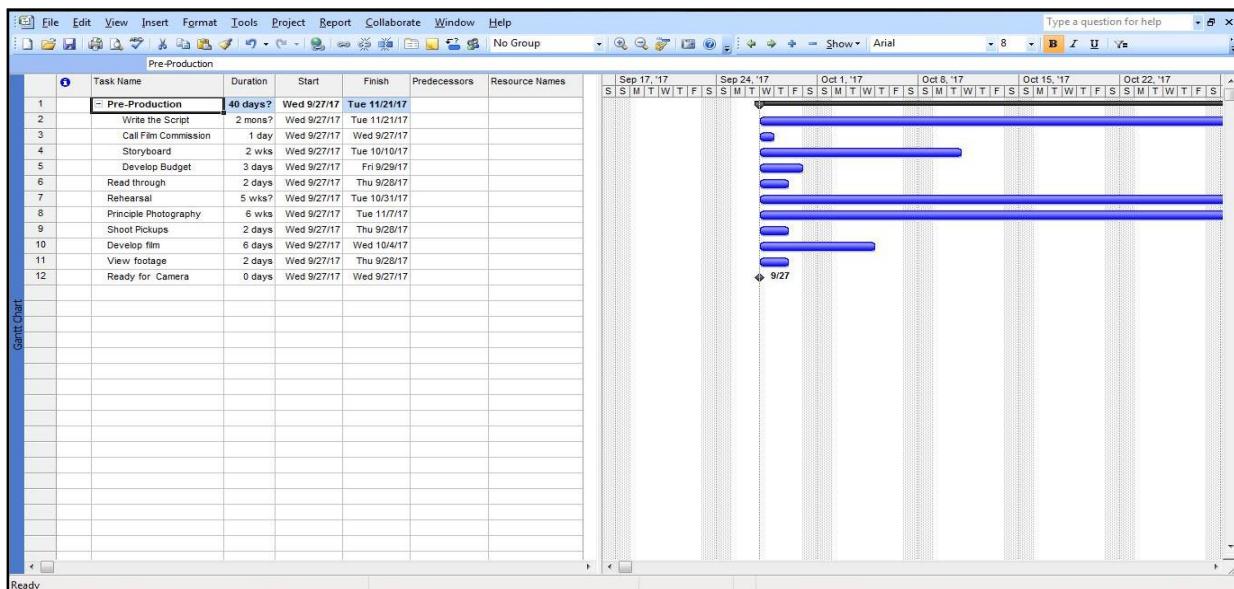
	<b>Pre-Production Tasks</b>	<b>78 days</b>	<b>Fri 22-09-17</b>	<b>Tue 09-01-18</b>	
	Write the script	60 days	Fri 22-09-17	Thu 14-12-17	
	Call Film Commission	1 day	Fri 15-12-17	Fri 15-12-17	36
	Storyboard	14 days	Mon 18-12-17	Thu 04-01-18	37
	Develop Budget	3 days	Fri 05-01-18	Tue 09-01-18	38
	<b>Production Tasks</b>	<b>89 days</b>	<b>Wed 10-01-18</b>	<b>Mon 14-05-18</b>	
	Ready for Camera	0 days			
	Read through	2 days	Wed 10-01-18	Thu 11-01-18	
	Rehearsal	35 days	Fri 12-01-18	Thu 01-03-18	42
	Principle Photography	42 days	Fri 02-03-18	Mon 30-04-18	43
	Shoot Pickups	2 days	Tue 01-05-18	Wed 02-05-18	44
	Develop Film	6 days	Thu 03-05-18	Thu 10-05-18	45
	View footage	2 days	Fri 11-05-18	Mon 14-05-18	46



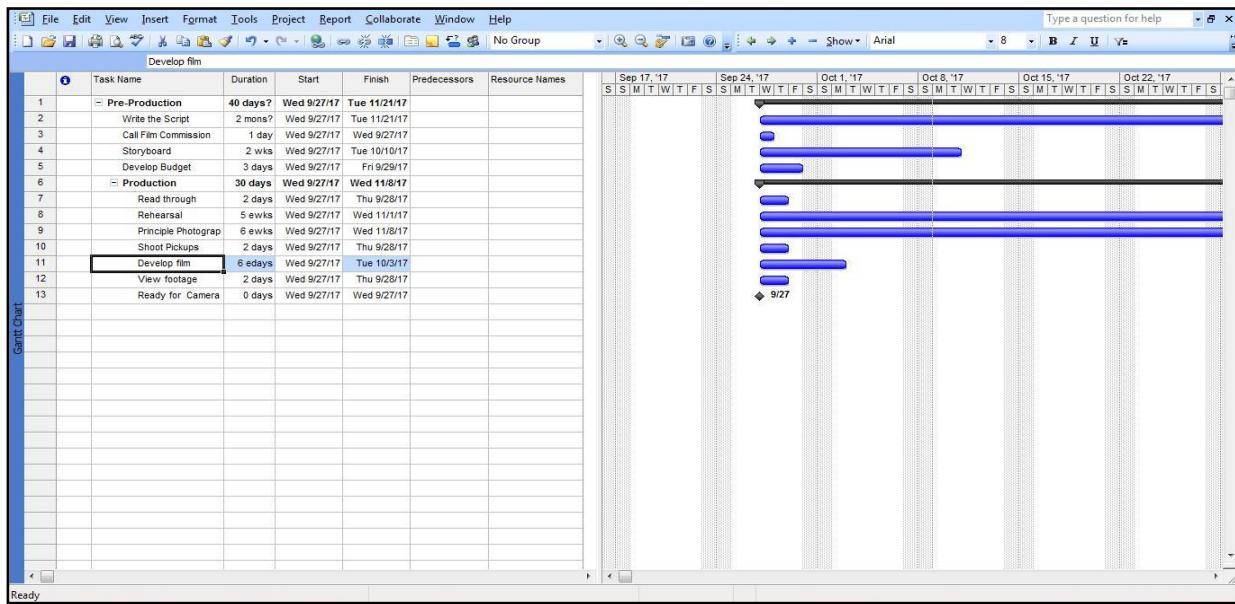
**2. Milestones:** Milestones are events that occur throughout the project that don't require a time value. In the Movie Making project, we can insert a milestone to show the date we should be ready for the camera. Milestones are represented by a black diamond on the Gantt chart.



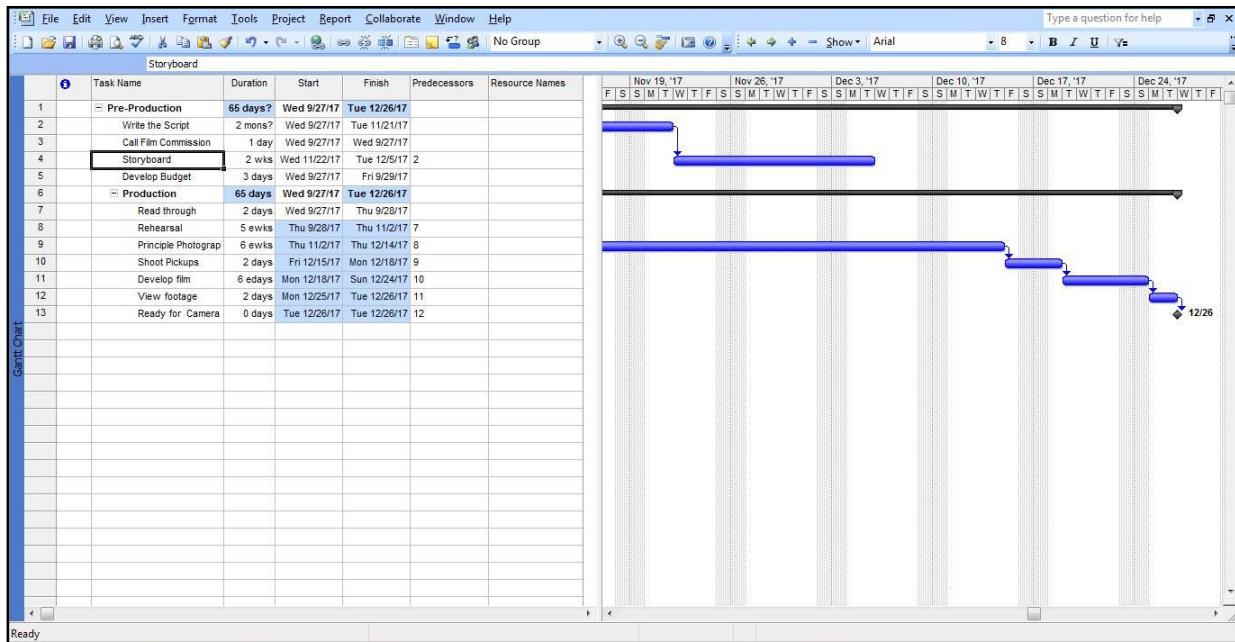
**3. Organizing Tasks:** Sometimes managers wish to view a summary of the project and for this; it is possible to organize tasks into summary headings. This will indent all the tasks, making them a part of new task.



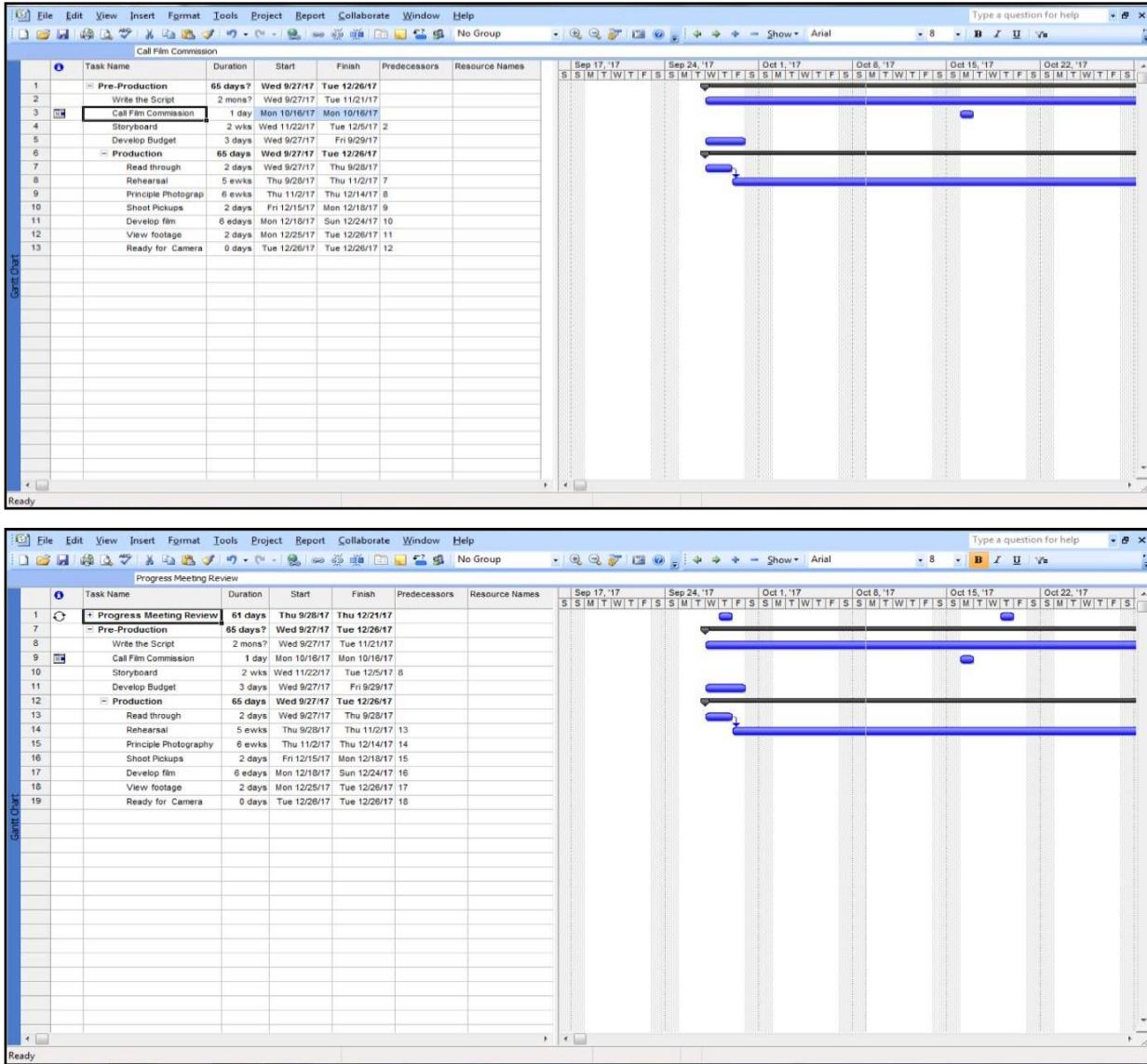
**4. Elapsed Time:** Often in projects you outsource tasks to other companies/people. Elapsed time can be indicated by adding e to the duration i.e. 6 ed for six elapsed days. Elapsed duration task includes the working weekends.



**5. Linking Tasks:** A fundamental principle in managing projects is planning the sequence of tasks. Often one task cannot begin until another has completed.



**6. Recurring Tasks:** In some projects there may be tasks that occur at a fixed frequency, for example progress meetings. MS Project 2007 allows you to create recurring instances of a task.



**Result:** In this experiment, we have practiced various functions concerning tasks and the result is shown in screenshots

# EXPERIMENT 6

**Date of Experiment:** 19<sup>th</sup> September 2022

**Date of Evaluation:** 20<sup>th</sup> September 2022

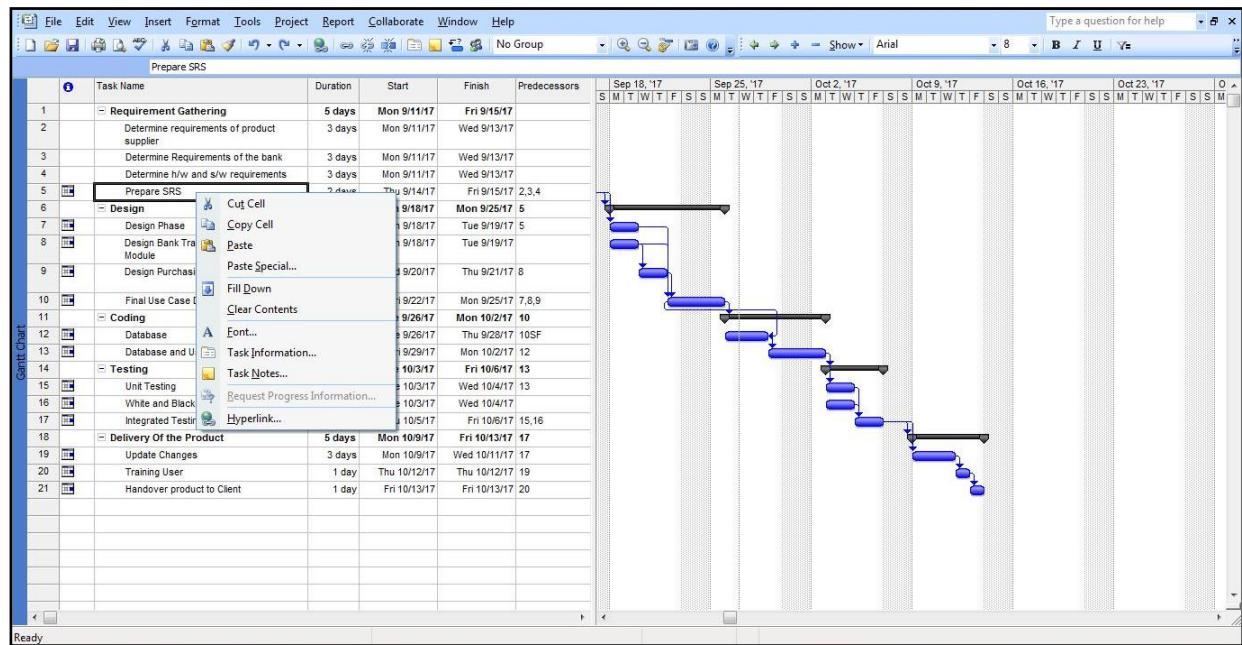
**Objective:** Selecting, Moving, Deleting Tasks.

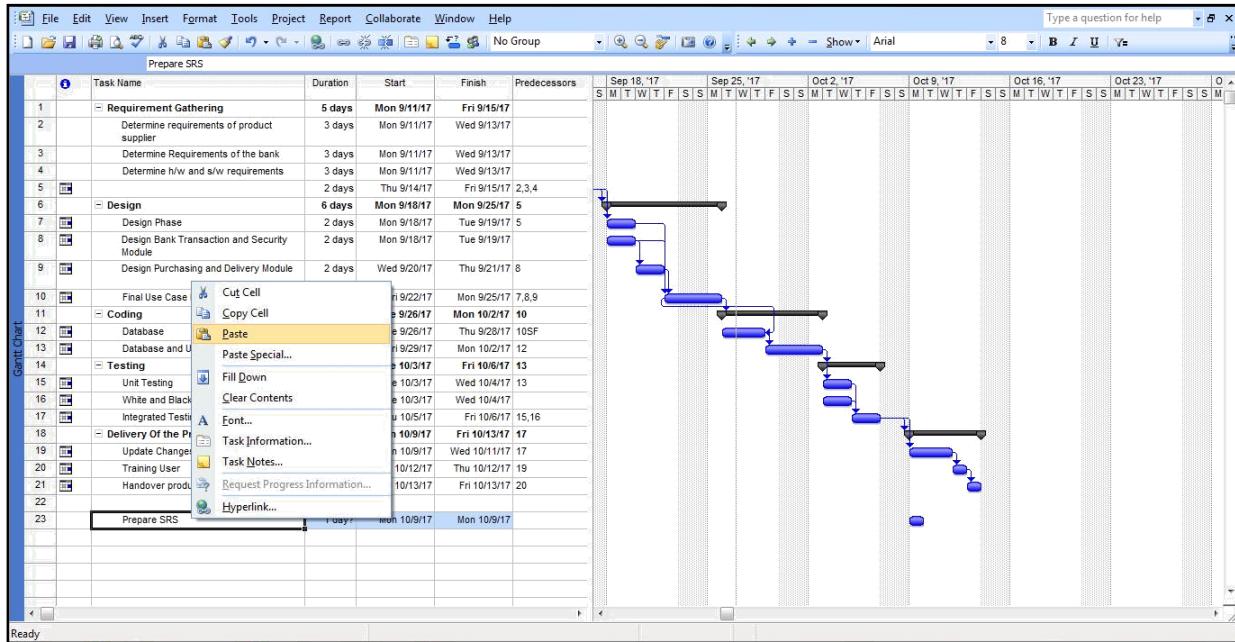
**Software used:** Microsoft Office Project 2007

## **Theory:**

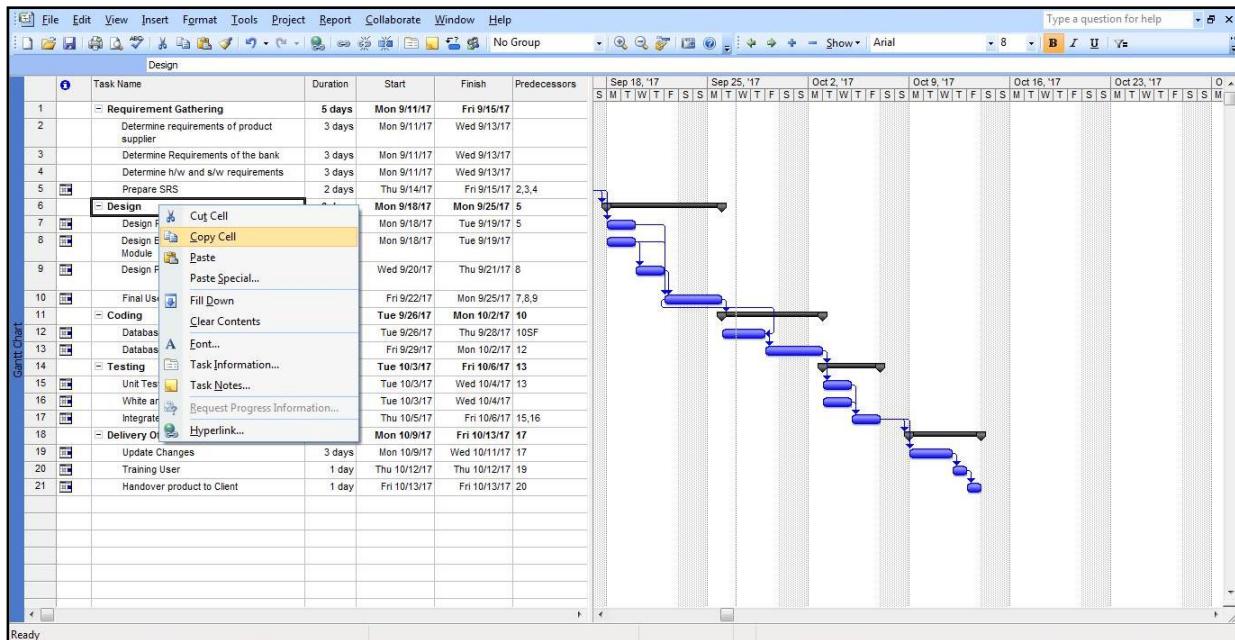
We must use the **Shift** key to select a contiguous set of tasks and the **Ctrl** key to select individually a set of specific tasks. Functions from the menu will then apply to the whole set of tasks selected.

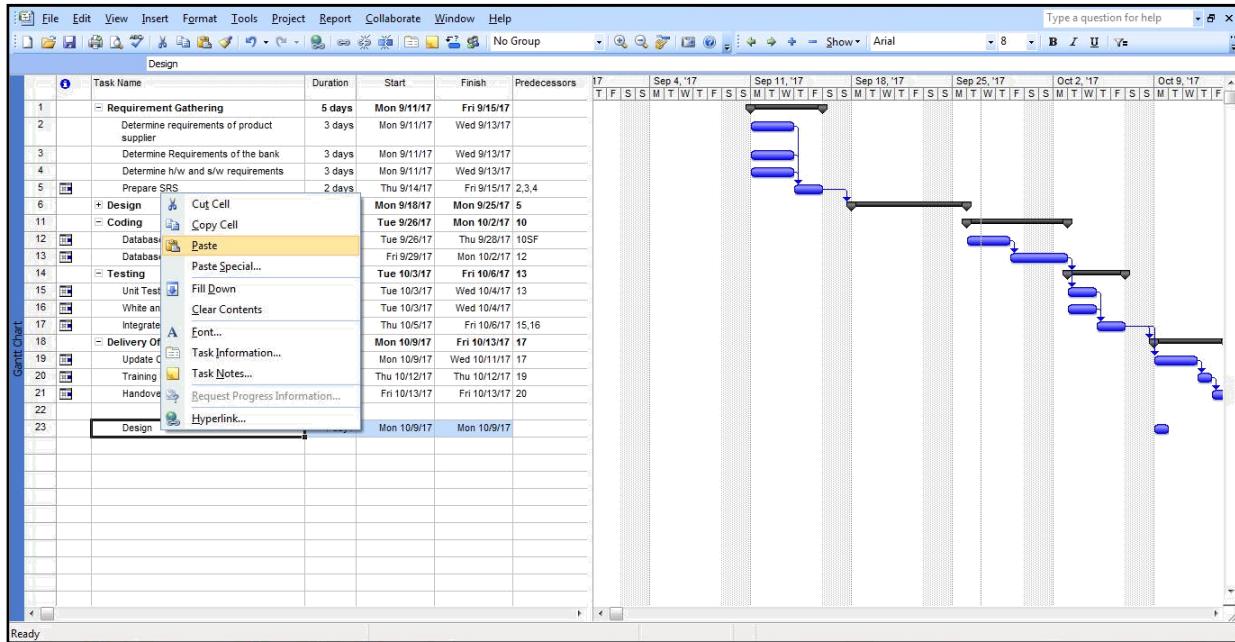
**1. Moving Tasks:** A task or set of tasks, selected as above, can be moved using the **Cut Task** option from the right-click menu.



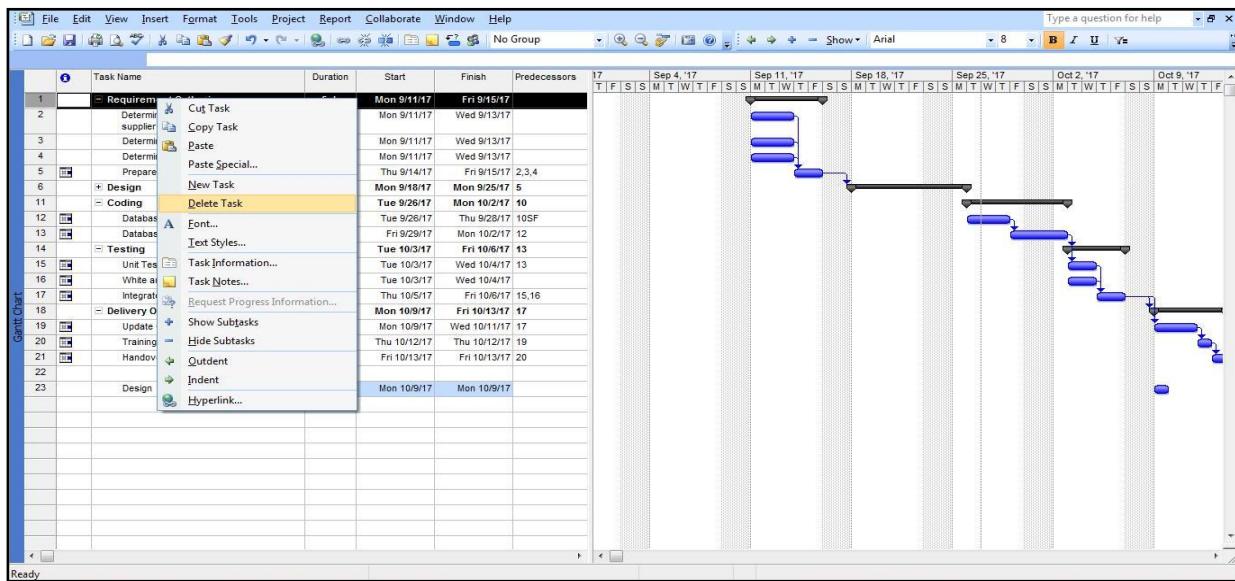


**2. Copying Tasks:** A task or set of tasks, selected as above, can be copied using the **Copy Task** option from the right-click menu.





**3. Deleting Tasks:** Click on the row number of one of your tasks. The task will then be selected and appear highlighted.



**Result:** In this experiment, we move, copy and deleting various task and the result is shown in screenshots.

# EXPERIMENT 7

**Date of Experiment:** 20<sup>th</sup> September 2022

**Date of Evaluation:** 27<sup>th</sup> September 2022

**Objective:** Develop experience in adding resources and their details.

**Software used:** Microsoft Office Project 2007

**Theory:** Many project tasks rely on specific resources being made available. Microsoft Project allows you to organize and attribute resources to specific tasks to help organize and prevent double bookings. Resources can include physical resources such as equipment and rooms or people that may be assigned to tasks.

Resources can be labelled as Work resources or Material resources. Work resources are charged at hourly or other rates. Material resources have fixed costs.

1. Adding Resources to a Project
2. Adding Details to Resources

	Resource Name	Type	Material Label	Initials	Group	Max. Units	Std. Rate	Ovt. Rate	Cost/Use	Accrue At	Base Calendar	Code
1	Director	Work		D		100%	\$5,000.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
2	Producer	Work		P		100%	\$5,000.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
3	Director of photography	Work		D		100%	\$3,000.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
4	Camera Assistant	Work		C		100%	\$1,200.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
5	Set photographer	Work		S		100%	\$800.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
6	Cin Alta 500HD Camera	Material		C			\$7,500.00		\$500.00	Prorated		
7	Grip Truck	Material		G			\$0.00		\$300.00	Prorated		
8	Sound Recording kit	Material		S			\$8,350.00		\$500.00	Prorated		
9	Editing Suit	Material		E			\$0.00		\$100.00	Prorated		
10	Committee Room	Material		C			\$0.00		\$100.00	Prorated		
11	DV Tape	Material		D			\$500.00		\$0.00	Prorated		

**Result:** In this experiment, we assign resources for various tasks as well as add detail of various resources and the result is shown in screenshots.

# EXPERIMENT 7.1

**Date of Experiment:** 20<sup>th</sup> September 2022

**Date of Evaluation:** 27<sup>th</sup> September 2022

**Objective:** Link specific resources to tasks.

**Software used:** Microsoft Office Project 2007

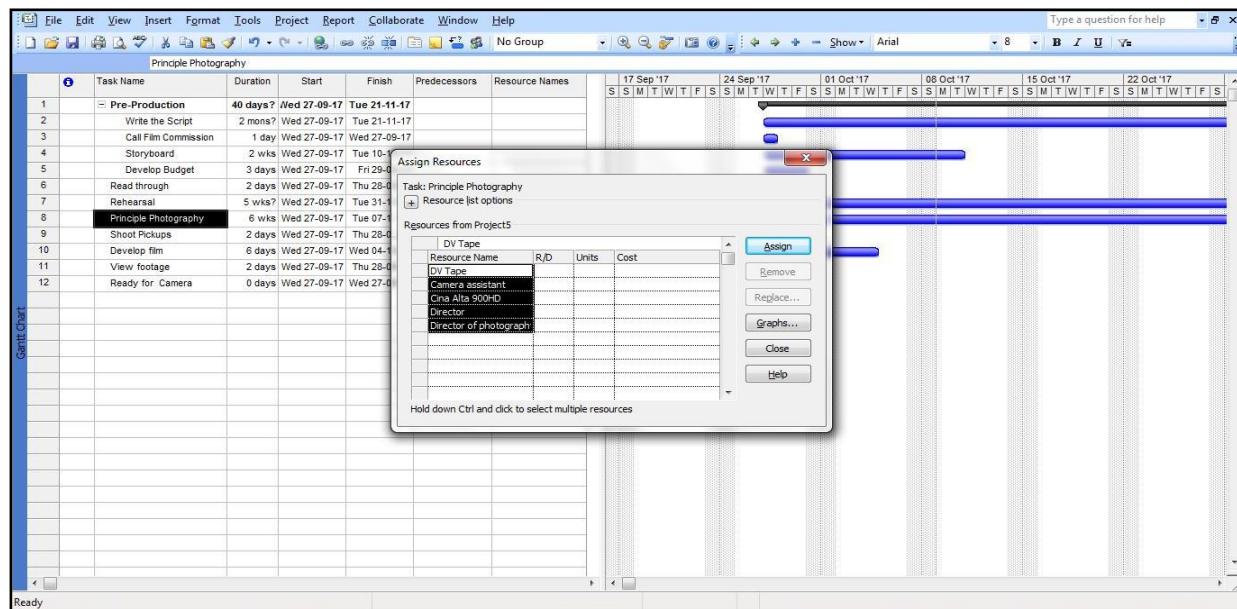
## **Theory:**

Use the **assign resources** tool to link tasks and resources together.

### Assigning Resources to Tasks

There are various steps to assign resources to tasks. We will look at some of them now.

- Ensure we are in the Gantt chart view via **View** then **Gantt chart**
- Select the **Principal Photography** task and select **Assign Resource** from the **Tools** menu



After selecting the resources by clicking on the assign button we can provide the resources of selected task

**Result:** In this experiment, we assign resources for various tasks and the result is shown in screenshots.

# EXPERIMENT 8

**Date of Experiment:** 27<sup>th</sup> September 2022

**Date of Evaluation:** 3<sup>rd</sup> October 2022

**Objective:** Critical Path in Microsoft Project 2007

**Software used:** Microsoft Office Project 2007

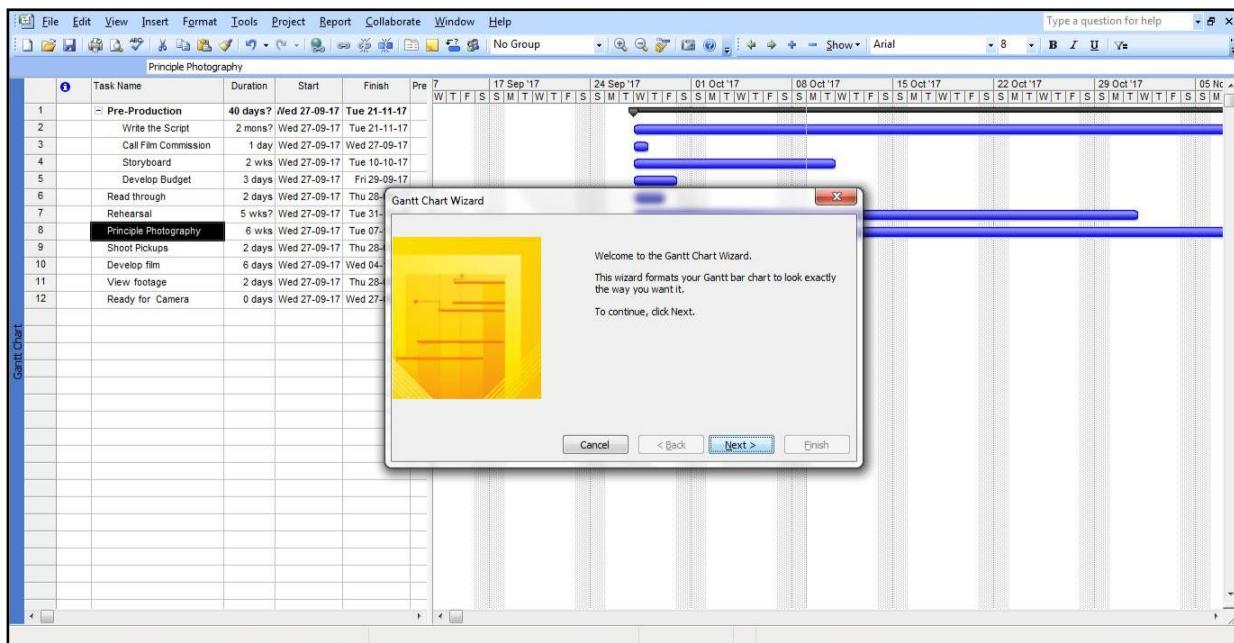
**Theory:** Understanding the critical path on project is an important concept as the critical path drives your end date. If there is a single delay in any of the tasks on the project schedule, it will have a direct impact on the project end date.

**Steps:**

To see the Gantt Chart View, follow these steps:

1. Open your project schedule in Microsoft Project.
2. Go to View | Gantt chart View.

**Start the Gantt chart Wizard**



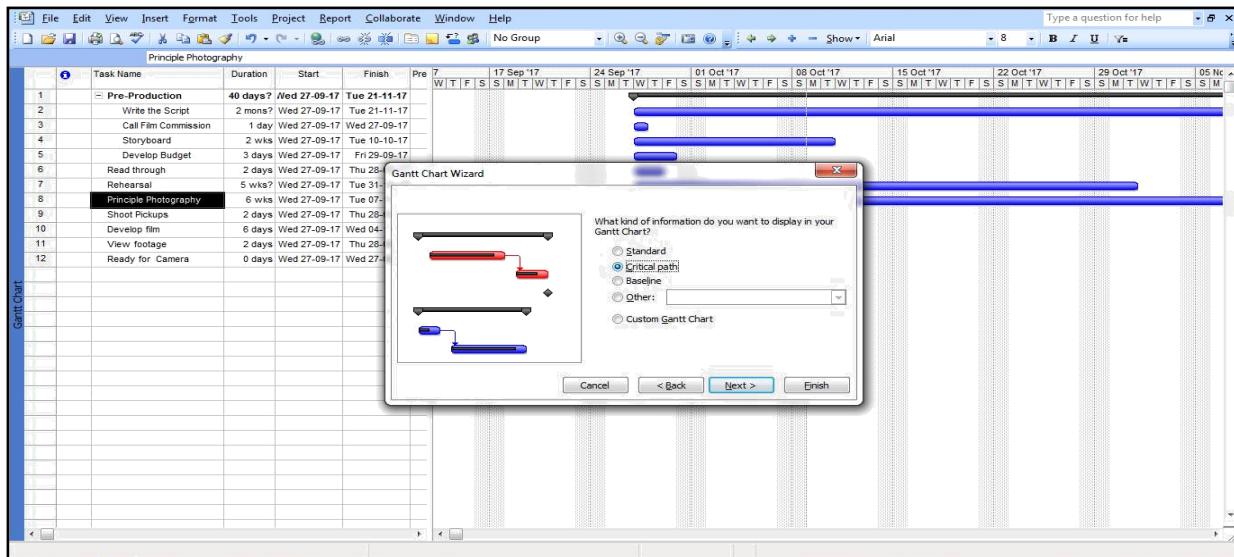


FIGURE 1 – GANTT CHART WIZARD

If we want to get a list of just the critical path tasks (Figure 2), you can use the Group By option in the Microsoft Project toolbar. I often use this view to determine which tasks and resources are on the critical path. This extra level of detail helps me understand what needs to be accomplished and who is responsible for the task.

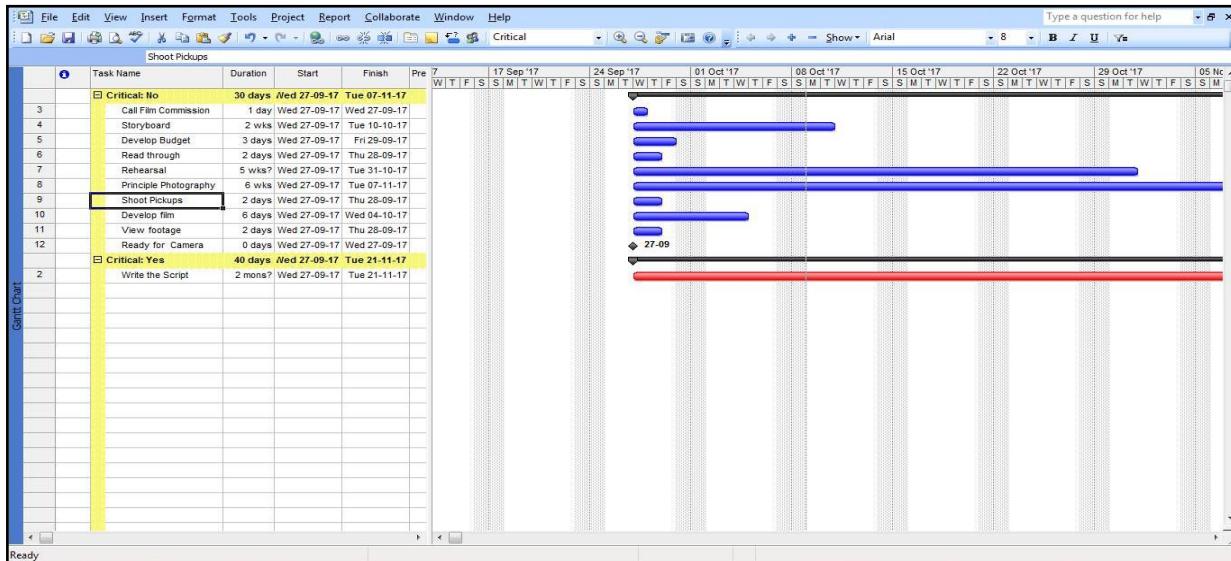


Figure 2 – Critical Path Using Group by Filter

Steps to view the critical path tasks

1. Confirm the standard toolbar is displayed. It should be there by default, but if it isn't, you can go to View | Toolbars | Standard.
2. Click the group by drop-down box (figure 3) and select critical from the list of values.

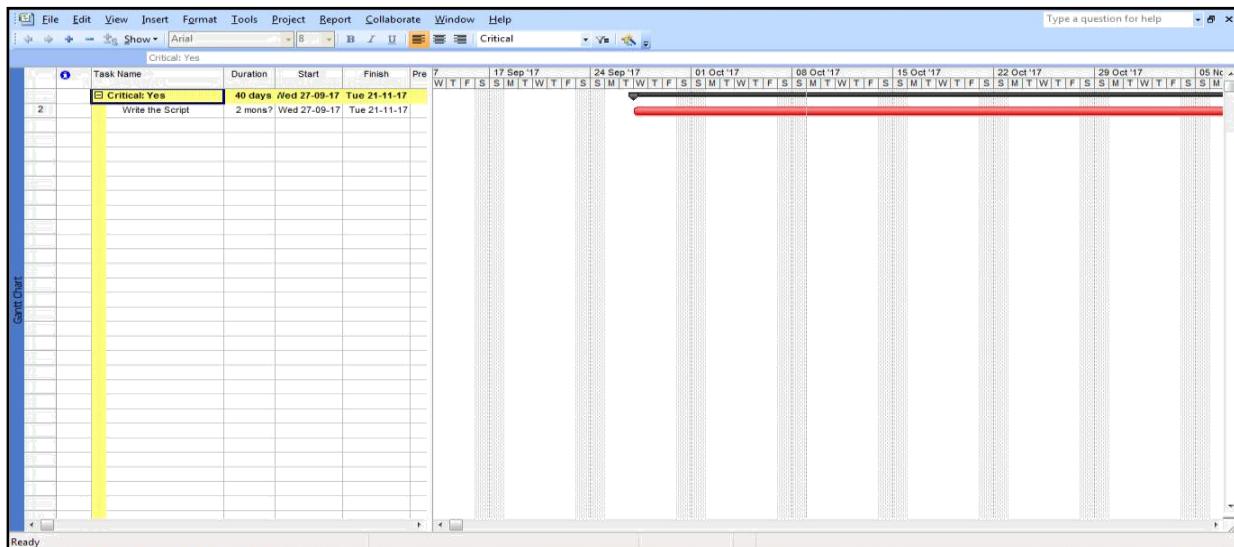


Figure 3 – Standard Tool Bar

### Steps to view the slack in the project schedule:

1. Go to View | Table | Schedule.
2. The Schedule table will be grouped by Critical and Non-Critical tasks (Figure 4).

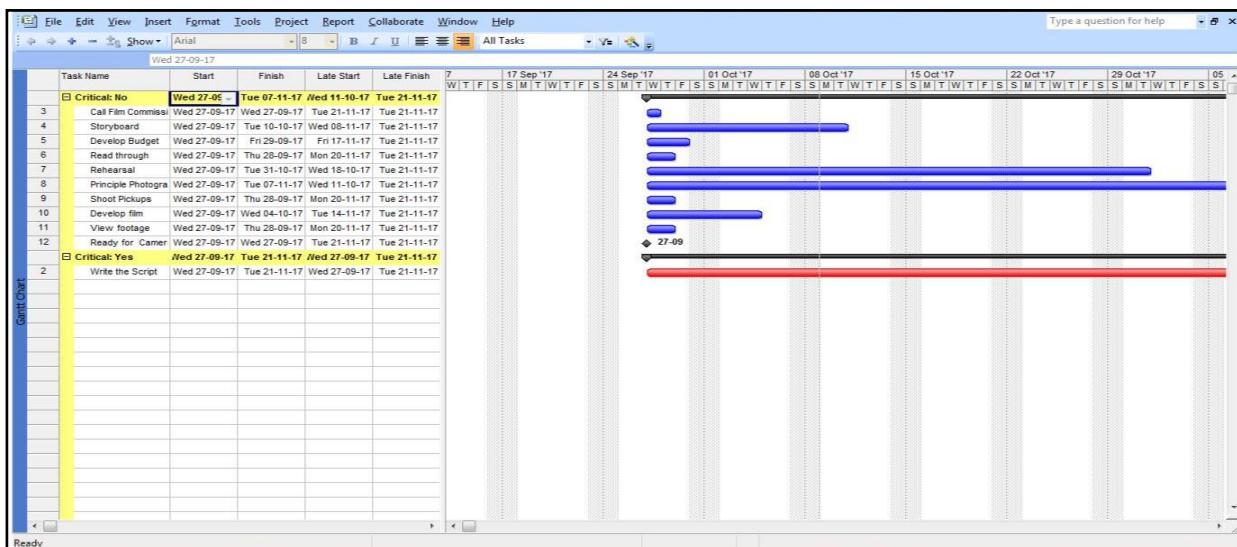


Figure 4 – Slack in Microsoft Project Schedule Table

**Result:** In this experiment, we find the critical path and the result is shown in screenshots.

# EXPERIMENT 9

**Date of Experiment:** 3<sup>rd</sup> October 2022

**Date of Evaluation:** 4<sup>th</sup> October 2022

**Objective:** Import Excel into Microsoft Project

**Software used:** Microsoft Office Project 2007

## **Theory:**

When you export data from Microsoft Project into Excel, the data file doesn't maintain the hierarchy. Creating the hierarchy in Excel usually involves grouping and indenting in Excel or using a custom macro to build the hierarchy. When you import an Excel file into Microsoft Project, it also lacks any of the indenting and summary tasks that make Microsoft Project a valuable roll-up tool.

		Task Name	Duration	Start	Finish	Predecessors	Resource Names
1		Scope	1 day	Thu 10/12/17	Thu 10/12/17		
2		Determine Project Scope	8 hrs	Thu 10/12/17	Thu 10/12/17		Management
3		Secure Project sponsorsh	1 day	Fri 10/13/17	Fri 10/13/17	2	Management
4		Define preliminary resourc	1 day	Mon 10/16/17	Mon 10/16/17	3	Project Manager
5		secure core resources	1 day	Tue 10/17/17	Tue 10/17/17	4	Project Manager
6		scope complete	1 day	Wed 10/18/17	Wed 10/18/17	5	
7		analysis/software require	1 day	Thu 10/12/17	Thu 10/12/17		
8		conduct needs analysis	1 day	Thu 10/19/17	Thu 10/19/17	6	Analyst
9		draft preliminary software	1 day	Fri 10/20/17	Fri 10/20/17	8	Analyst
10		develop preliminary budge	1 day	Mon 10/23/17	Mon 10/23/17	9	Project Manager
11		review software specifica	8 hrs	Tue 10/24/17	Tue 10/24/17	10	Project Manager,Analyst
12		incorporate feedback on sc	1 day	Wed 10/25/17	Wed 10/25/17	11	Analyst
13		develop delivery timeline	1 day	Thu 10/26/17	Thu 10/26/17	12	Project Manager
14		obtain approvals to proce	8 hrs	Fri 10/27/17	Fri 10/27/17	13	Management,Project Manager
15		secure required resources	1 day	Mon 10/30/17	Mon 10/30/17	14	Project Manager
16		analysis complete	1 day	Tue 10/31/17	Tue 10/31/17	15	
17		design	1 day	Thu 10/12/17	Thu 10/12/17		
18		review preliminary softwa	1 day	Wed 11/1/17	Wed 11/1/17	16	Analyst

Figure 1 – Schedule in Excel

## Build the Excel to Project import map

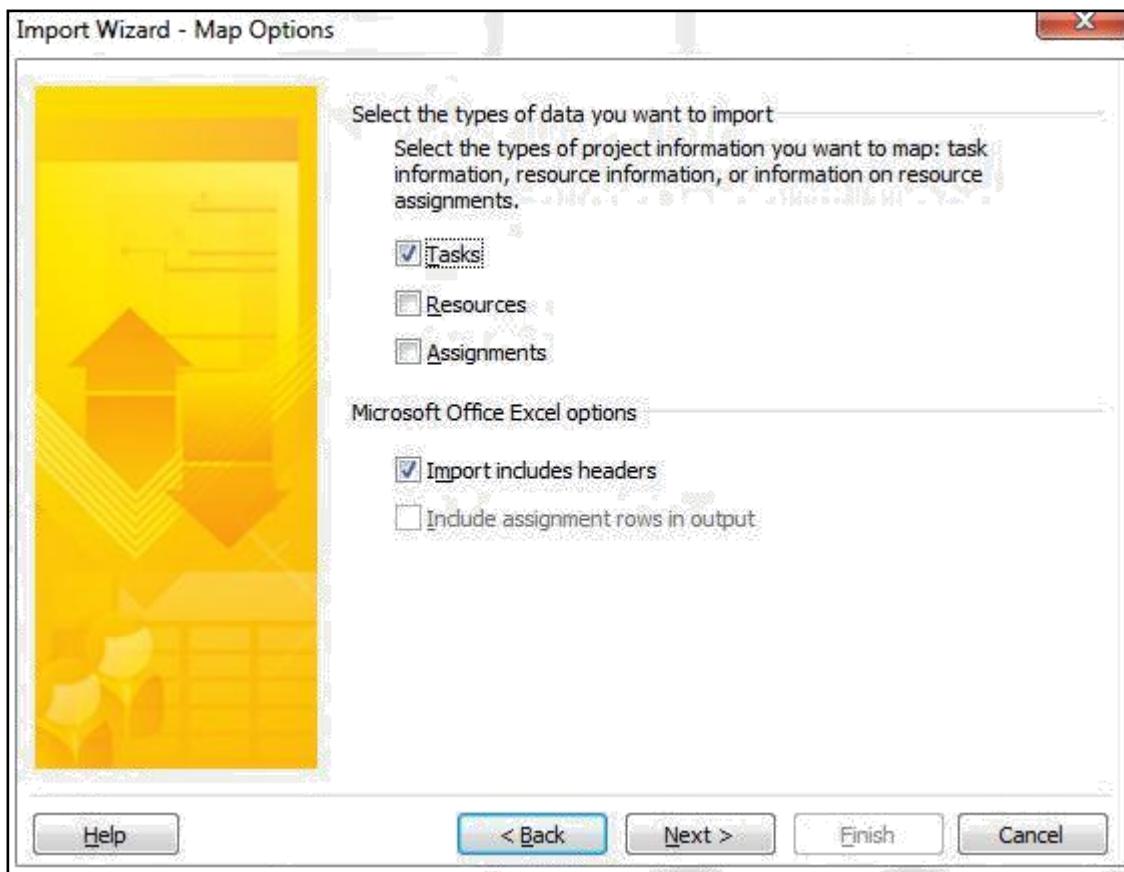
To develop an import map that includes the key fields in the table below

Field Name	Description
------------	-------------

ID	The Task ID for the Microsoft Project task
Outline Level	Determines the Outline Level in a project's hierarchy. An Outline Level of 1 is at the highest level in the hierarchy, and an Outline Level of 5 has four summary level tasks above it.
Name	Task Name
Start	Forecasted Start date
Finish	Forecasted Finish date
% Complete	Task completion percentage
Baseline Start	Original Baseline Start date
Baseline Finish	Original Baseline Finish date
Actual Start	Actual task Start date
Actual Finish	Actual task Finish date
Predecessors	Identifies the Task ID of a predecessor task
Resource Name	Assigned Resource

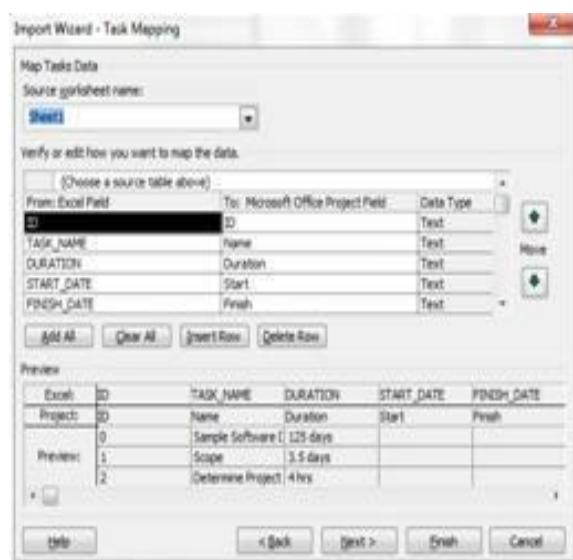
**To build this map in Microsoft Project:**

1. Open a sample Microsoft Project schedule
2. Go to File | Save As.
3. Select the Microsoft Excel Workbook (\*.xls) as the Save as Type and click Save.
4. Click Next and leave Selected Data as the option.
5. Click New Map.
6. Select the Tasks checkbox



7. Click the Microsoft Office Project field and select the fields in table above.

8. Click the Next button.



9. Click Save Map and Save It as Excel MPP Map.

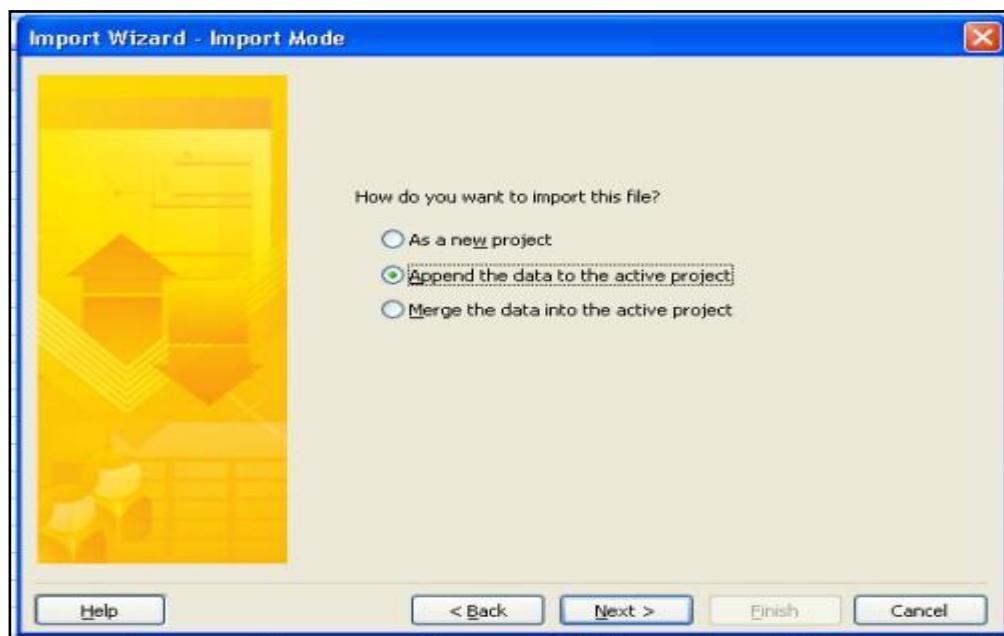
10. Click the Finish button.

The Excel extract will now contain the key fields needed to build the project hierarchy.

### **Import Excel Into Microsoft Project Wizard**

Excel is imported into Microsoft Project by following these steps:

1. Start Microsoft Project with a blank project schedule.
2. In Microsoft Project, go to File | Open.
3. Change the Files of Type combo box to Microsoft Excel (\*.xls).
4. Select the extract file and click Open.
5. Click the Next button.
6. Select Use Existing Map.
7. Select the Excel MPP map.
8. Select Append the Data to the Active Project

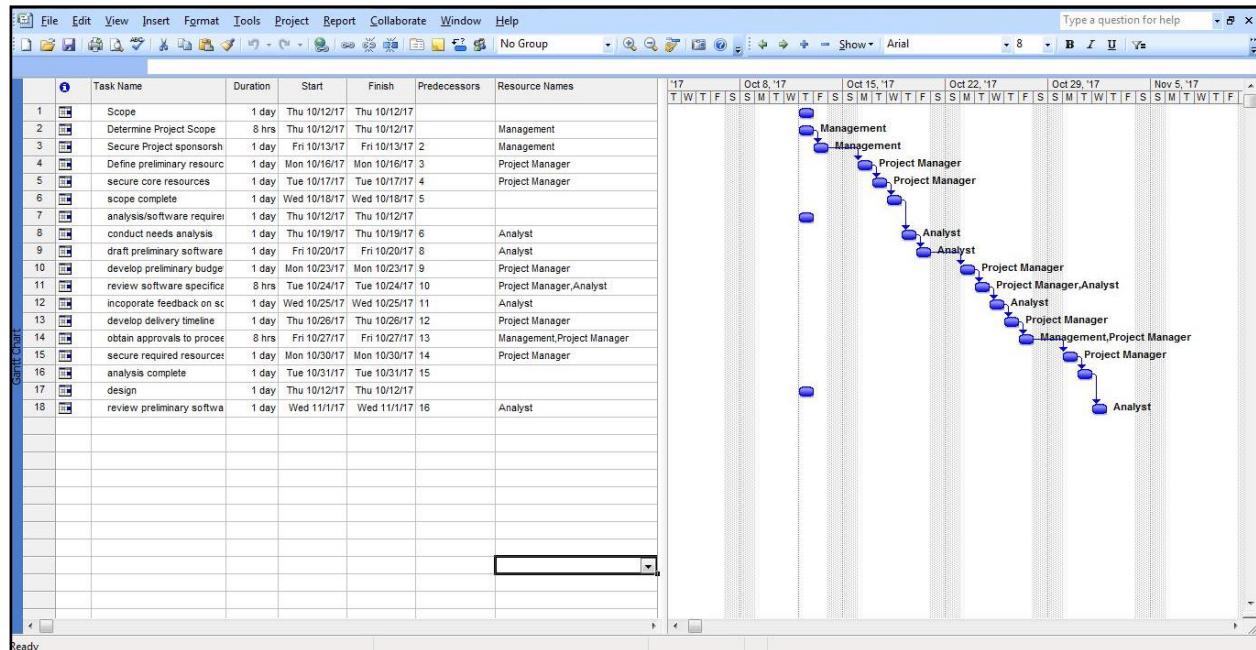


9. Click the Next button.

10. Click the Next button.

11. Click the Finish button.

The result is a properly formatted Microsoft Project file.



### Result:

In this experiment, we have exported Microsoft excel sheet into Microsoft project and the result is shown in screenshots.

## EXPERIMENT 10

**Date of Experiment:** 4th October 2022

**Date of Evaluation:** 10<sup>th</sup> October 2022

**Objective:** Working with Effort-Driven Scheduling

**Software used:** Microsoft Office Project 2007

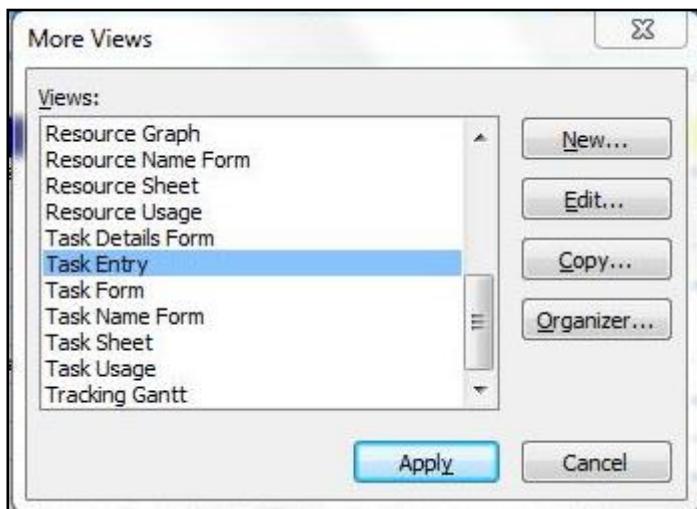
**Theory:** In MS Project, the default scheduling method is effort-driven scheduling. Effort-driven scheduling extends or shortens the duration of a task to accommodate changes to resources but doesn't change the total work for the task. Work is the amount of effort, or number of hours, resources put into a task

**Formula:**

$$\text{Work} = \text{Duration} * \text{Units}$$

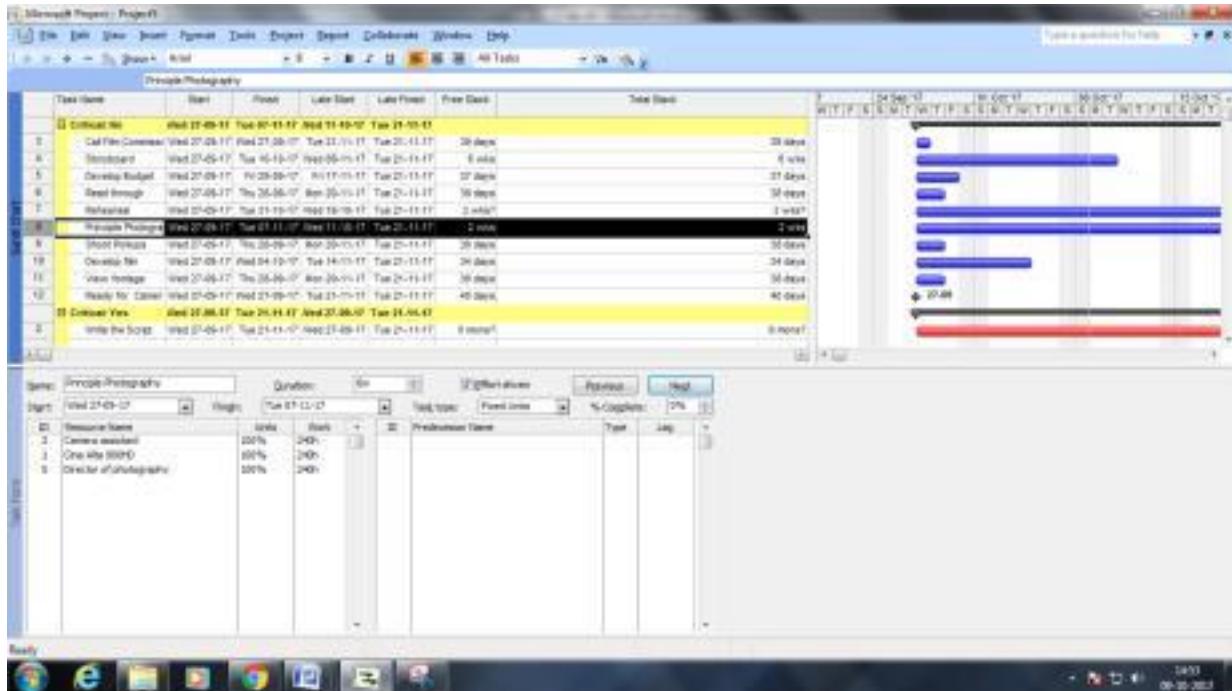
**Steps:**

1. Make sure you are in Gantt chart view and your table is the **entry table**.
2. From the View menu, click More Views. The More Views dialog box appears (figure 1). Select **Task Entry** and then press **Apply**.



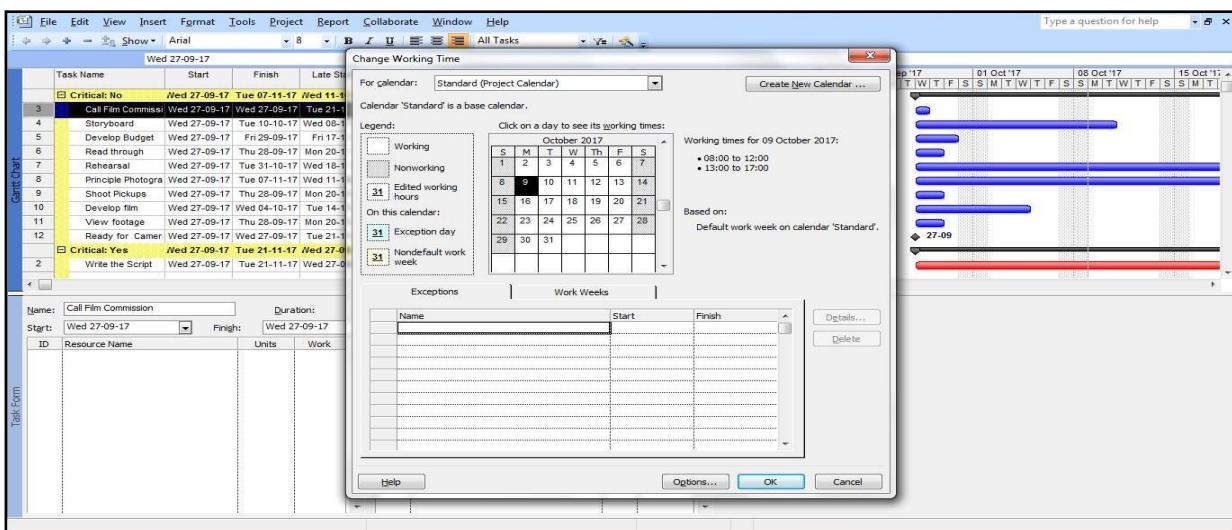
**Figure 1**

3. We will notice that our screen "splits" into two separate windows or panes (figure 2).



**Figure 2**

3. In the **Max. Units** field for the resource, type the number of total units that this resource is available for this project. The maximum unit's value specifies how much of this resource is available for this project — for example, part-time or multiples.
4. We want to change the working time then goes to tool -> change working time.



**Result:** In this experiment, we find the critical path and the result is shown in screenshots.

# EXPERIMENT 11

**Date of Experiment:** 11<sup>th</sup> October 2022

**Date of Evaluation:** 17<sup>th</sup> October 2022

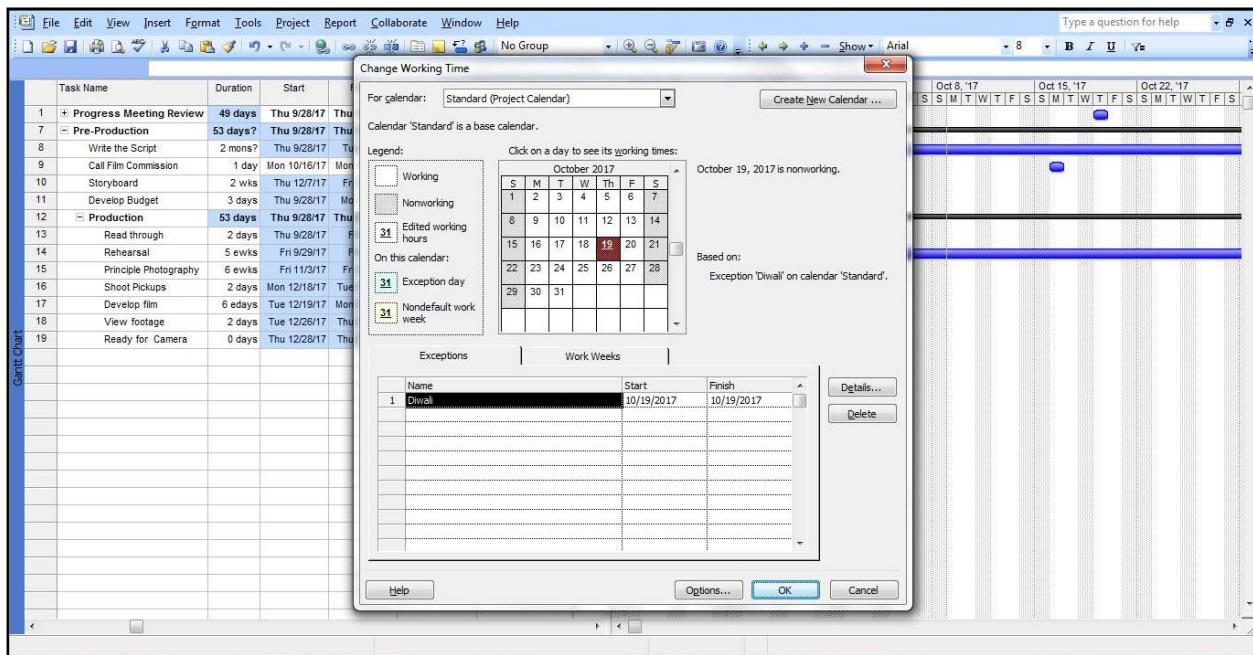
**Objective:** working with calendars in MS project 2007

**Software used:** Microsoft Office Project 2007

## Theory:

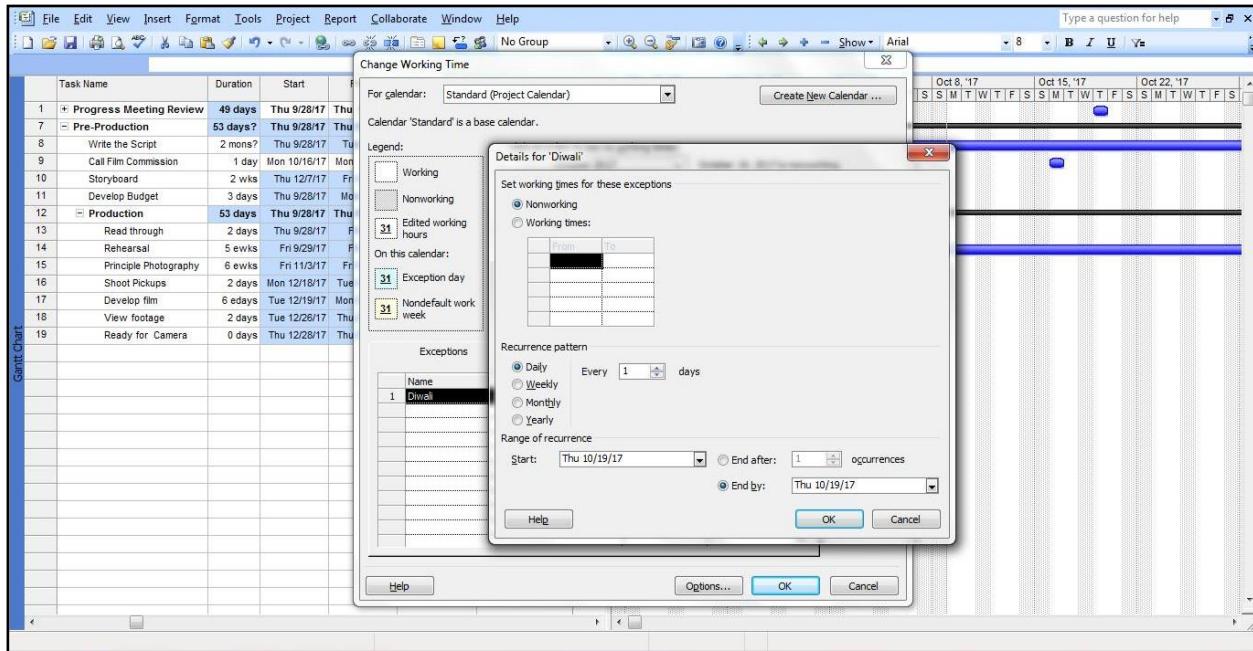
### Steps to Changing the Working Time:

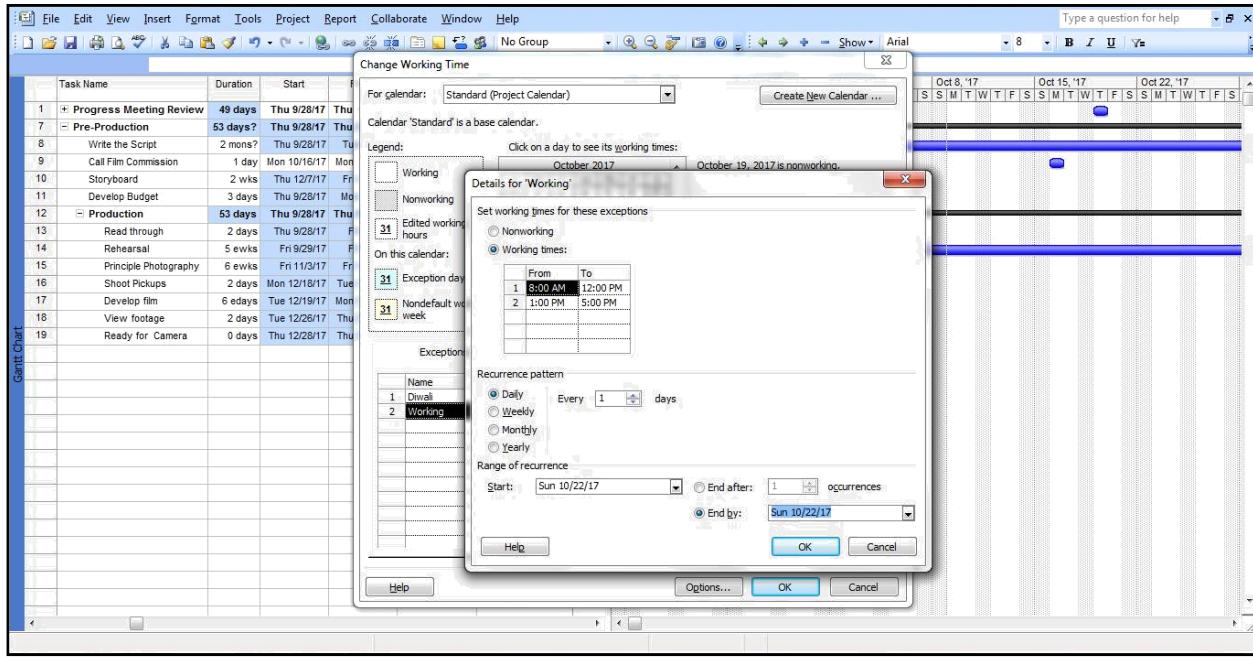
1. Click on the **Project** menu and select **Project Information**. Note that our project is scheduled to begin on Monday, October 1 and end on Friday, November 23. Press OK to close window.
2. From the **Tools** menu, select **Change Working Time**.
3. Select **Monday, October 8, 2007**, using the scrollbar. (Make sure you have the right year!)
4. Under **Set Selected Date(s) to:** click **Nonworking Time**. (**Figure 2**).
5. Press **OK**.
6. Check your **Project Information Statistics**. This change did not influence the finish date, but overall duration of the project was **shortened** by one day to **38.25** days. Why? (Hint: critical path?)



7. When you close this dialog box and check your **Gantt chart**, you will notice that Monday, October 8 is shaded grey in the column.

8. Just reverse; let's say that due to this holiday, we will be working on Saturday, October 13 from 8 AM to 12 PM and 1 PM to 5 PM (we have a one-hour lunch break).
9. Under **Tools**, select **Change Working time** again.
10. Click on Saturday, October 13, 2007.
11. Select **Non-default working Time**.
12. Enter the two-time frames: from 8:00 AM to 12:00 PM and from 1:00 PM to 5:00 PM. (**Note:** they may be automatically entered for you! Can you guess why?)
13. Click **OK**. What happened to your project completion date and overall duration? (Same completion date, but why 39.25 days?)





**Result:** In this experiment, we are working with calendar by using this we can set the date and the result is shown in screenshots.

# EXPERIMENT 12

**Date of Experiment:**

**Date of Evaluation:**

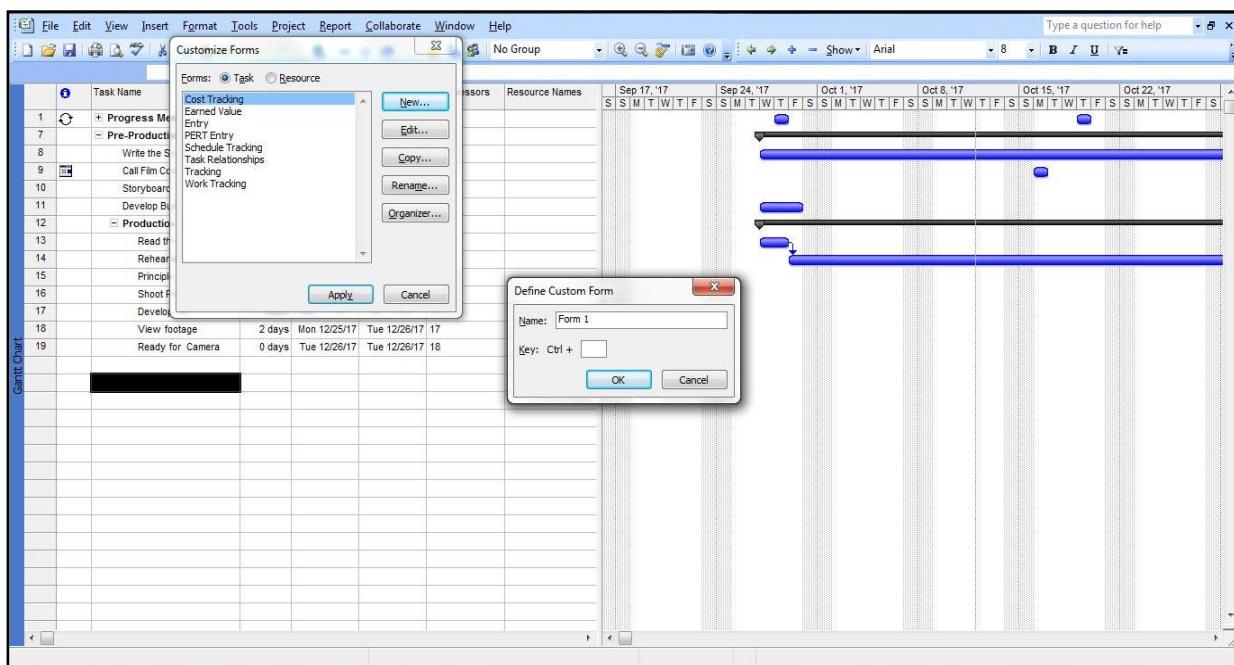
**Objective:** Creating a Custom Form in MS PROJECT 2007

**Software used:** Microsoft Office Project 2007

**Theory:**

**Steps:** various steps these are:

1. Click the Forms button on the Custom Forms toolbar.
2. In the Customize Forms dialogue, click New.
3. Name your form. Click OK.
4. Click the Edit menu and click Information.
5. Specify the size and position of your form.
6. Use the Item menu to add controls.
7. Save your form and exit the Custom Form Editor.
8. Use your form via the Customize Forms dialogue.





**Result:** In this experiment, we create the custom form and the result is shown in screenshots.

# EXPERIMENT 13

**Date of Experiment:**

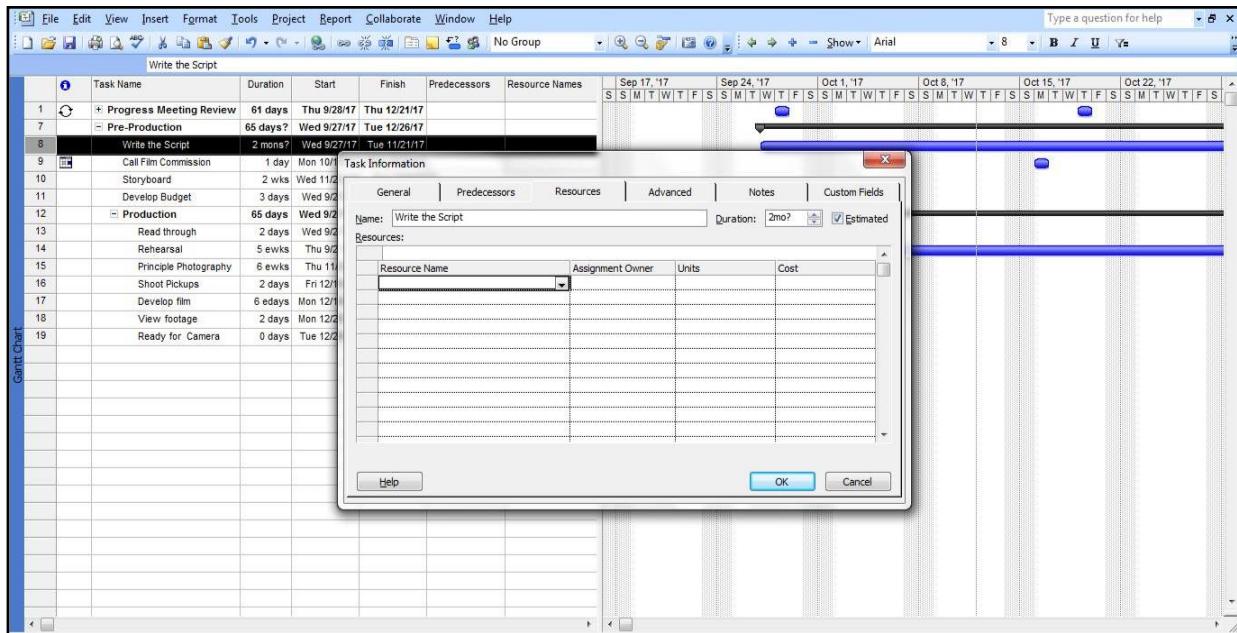
**Date of Evaluation:**

**Objective:** Dealing with Over Allocated Resources

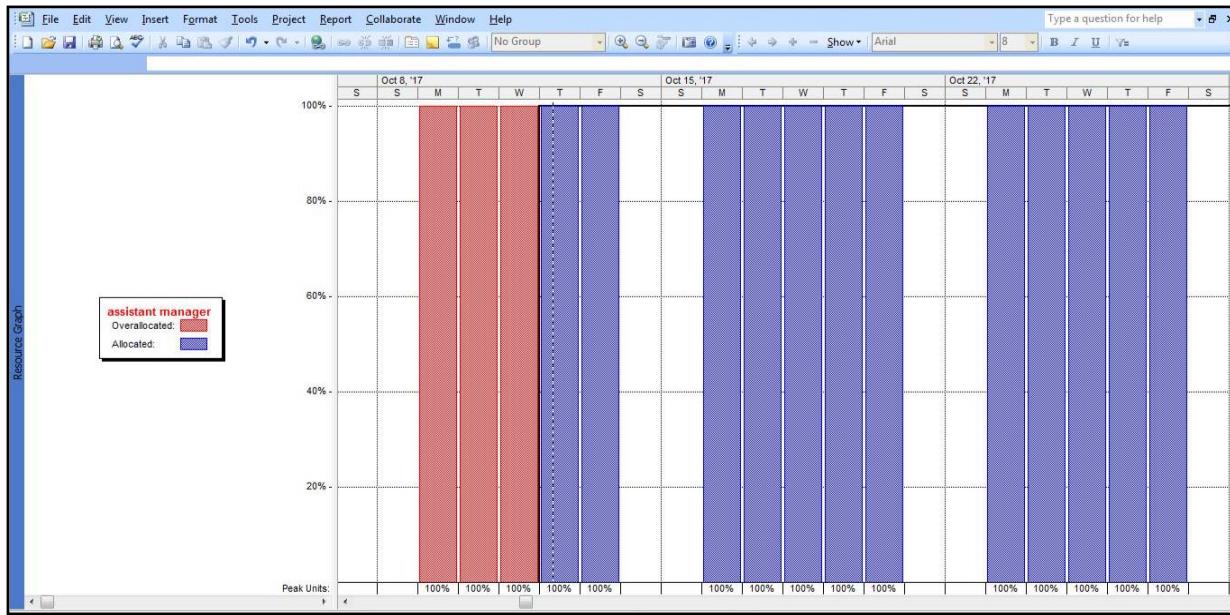
**Software used:** Microsoft Office Project 2007

**Theory:** There are various steps these are:

1. Navigate to View ->Resource Usage to determine whether a resource is over allocated.
2. Navigate to task->Double-click on task name -> Resources tab to assign resources to the task.



Click view --> Resource Graph



**Result:** In this experiment, we deal with allocating resources and the result is shown in screenshots.

# EXPERIMENT 14

**Date of Experiment:**

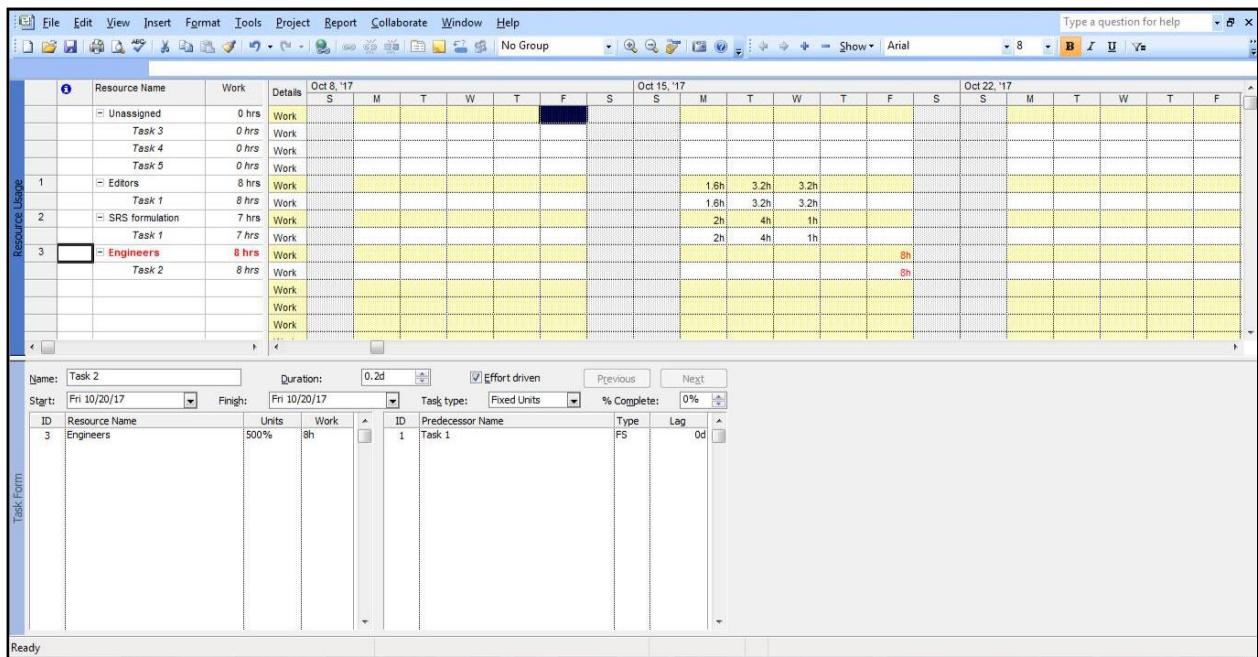
**Date of Evaluation:**

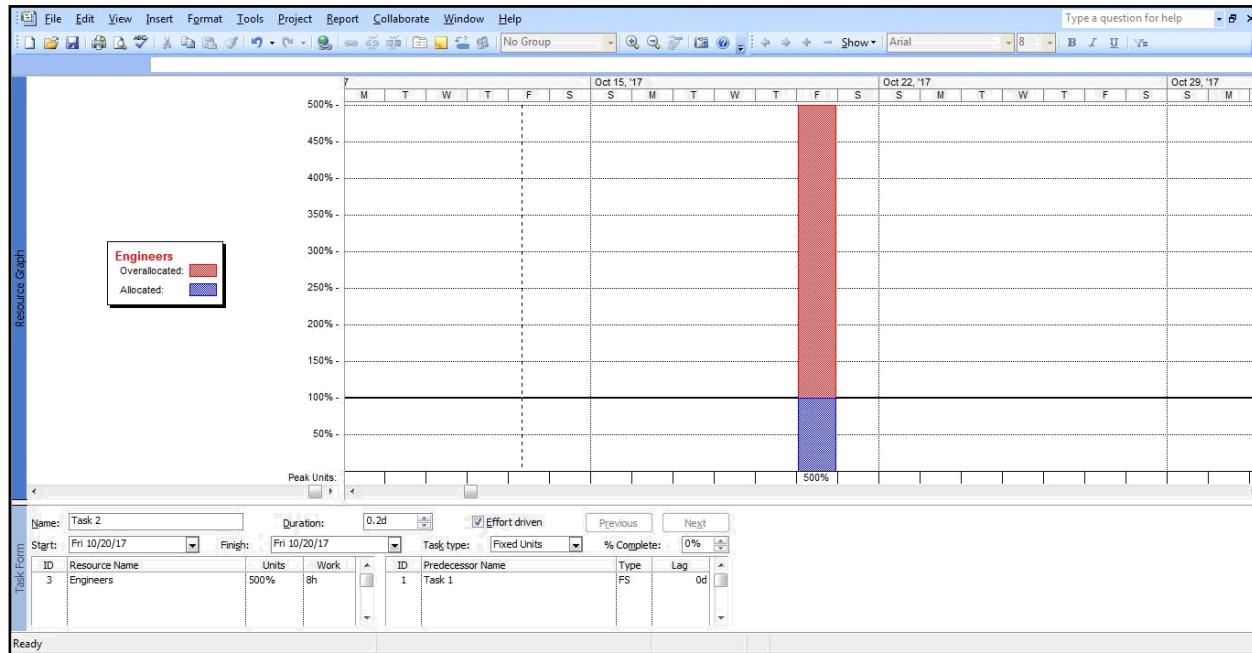
**Objective:** Creating budget summary report in MS Project 2007

**Software used:** Microsoft Office Project 2007

**Theory:**

Click on reports ->visual reports





**Result:** In this experiment, we visualize the report and the result is shown in screenshots.