Project Management

Prof. A. Ramesh

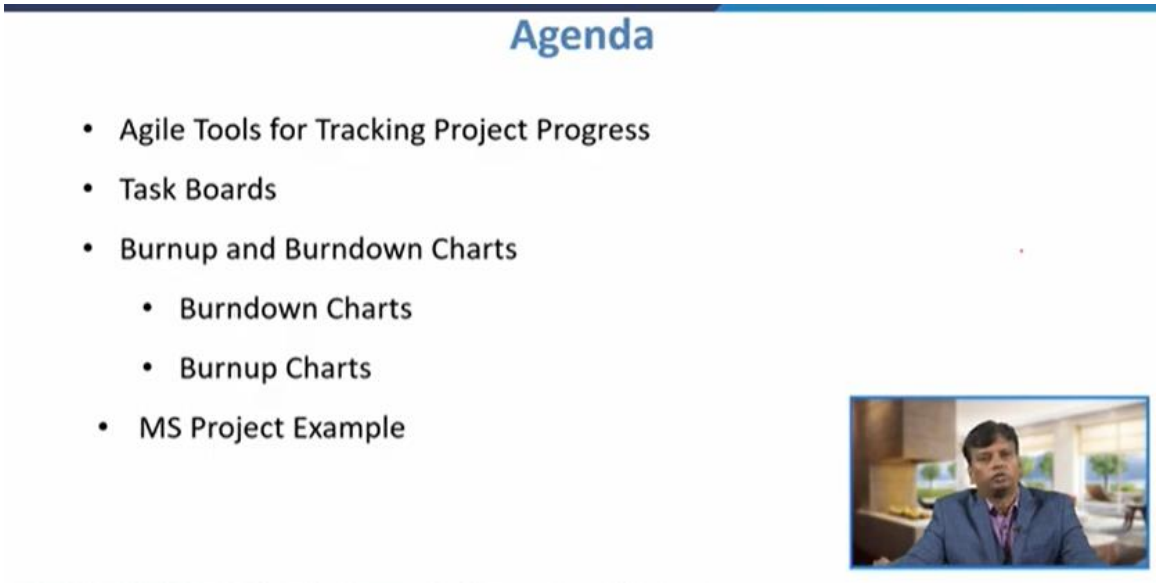
Department of Management Studies

Indian Institute of Technology Roorkee

Week: 6

Lecture 30- Agile tools for tracking project

Dear students, in this lecture we will discuss about agile tools. For tracking project, in the previous class I have discussed about earned value analysis. Now we will discuss about agile tools for tracking your project. So, the agenda for this lecture is agile tools for tracking project progress, then task about three tools we will discuss about in this class, one is a task board, then burn up and burn down chart. After that I will explain one tutorial on MS project, there we will discuss about some features of Microsoft project software. So, agile tools for tracking project progress, our discussion in earlier lectures highlighted a variety of ways the agile approach to project management differs from more traditional approaches.



Agile Tools for Tracking Project Progress

- Our discussions in earlier lectures highlighted a variety of ways the Agile approach to project management differs from more traditional approaches.
- Given this, it should come as no surprise that Agile has unique practices, methodologies, and conventions for monitoring projects.

We studied about many differences between traditional project management and agile project management. So, for tracking the project also the way the tools which we are using for traditional project is different, the tools which we use for agile project management is different. So, given this it should come as a no surprise that the agile has unique practices, methodologies and conventions for monitoring projects. In the traditional waterfall approach, when your project is evaluated to be 90 percentage complete, this typically means that there is a 90 percentage of progress towards completing the project, but likely 0 percentage is completed and operational.

Agile Tools for Tracking Project Progress

- In the traditional Waterfall approach, when a project is evaluated to be 90% complete this typically means that there is 90% progress toward completing the project but likely 0% is completed and operational.

Agile Tools for Tracking Project Progress

- In the Agile project management context, it means that 90% of the highest requirement features are completed and operational.
- Actually, the concept of earned value is not particularly applicable to Agile projects.

But in the agile project management context, it means that 90 percentage of the highest requirement features are completed and operational. So, in the traditional project when we say 90 percentage completion, so 90 percentage the task is completed, but here in the agile project management when I say 90 percentage, so 90 percentage of the highest requirements features are completed. Actually the concept of earned value is not particularly applicable in agile project. The reason is that for traditional project scope is already fixed it, we can see how much percentage we have achieved the scope, but in agile project scope is keep on changing. So, the techniques which we have learned in the previous lecture about earned value analysis is not applicable for agile projects.

Agile Tools for Tracking Project Progress

- Because earned value is based on the assumption that the project's scope is fixed
- But Agile explicitly embraces changes to project scope as more is learned throughout the project.

Because the earned value is based on the assumption that the project scope is fixed, but in agile project explicitly embraces changes to project scope as more is learned throughout the project. So, the way we look at the scope is the very important unique characteristics of agile project that says that in agile project management earned value analysis is not

possible. Now, we will discuss about the first tool for tracking agile project. One is a task board. As was discussed the product backlog and sprint backlog are key scrum artefact that contain the complete list of requirements for the product being developed or improved and the requirement to be completed in the current sprint respectively.

Task Boards

- As was discussed, **the product backlog and sprint backlog** are key scrum artefacts that contain the complete list of the requirements for the product being developed or improved and the requirements to be completed in the current sprint, respectively.

Task Boards

- Throughout the project, as sprints are completed, the team updates its average velocity which in turn can be used to assess the progress to date and to estimate the amount of time required to complete the remaining product backlog items.

Task Boards

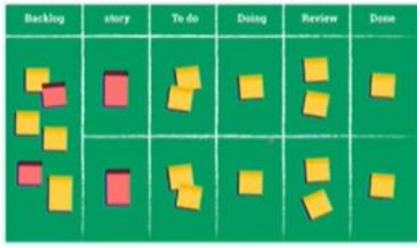
- Furthermore, the sprint backlog is updated daily and available to all team members providing the team with real-time information on the status of the sprint.

Throughout the project as sprints are completed the team updates its average velocity which in turn can be used to assess the progress to date and to estimate the amount of time required to complete the remaining product backlog items. So, in agile project

management we learn something called velocity of completing the sprint. So, based on that velocity we can say how much time it is going to take the remaining backlog items. Furthermore, the sprint backlog is updated daily and available to all team members providing the team with real time information on the status of the sprint. Now, I will show you the sample task board.

Task Boards

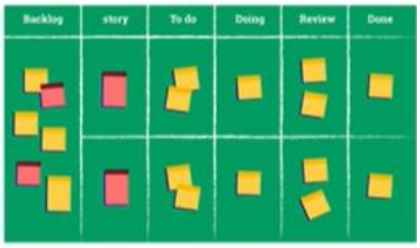
- As shown in Figure, task boards are divided into several columns to track the progress of the tasks to be completed during the sprint.
- The second column in the Figure identifies the user stories being addressed in the current sprint.



As shown in the figure task boards are divided into several columns to track the progress of the task to be completed during the sprint. So, we have different column is there. First one is the list of backlogs like what are the things has to be completed then user story, users requirement then to do after that what we are doing then finally reviewing then at the end we talk about what is completed. So, as shown in the figure the task board are divided into several columns to track the progress of the task to be completed during the sprint. The second column in the figure identify the user stories here this one user stories being addressed in the current sprint.

Task Boards

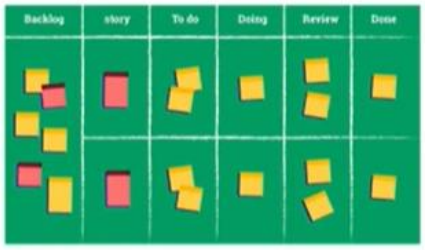
- The user stories are broken down into more detailed requirements to create specific tasks, which are often written on sticky notes.
- The status of the tasks is tracked by placing the tasks in the appropriate column from **to do** (not started) to **in-progress** (started but not complete) to **done** (task completed and approved by the product owner).



The user stories are broken down into more detailed requirement to create specific task which are often written on sticky notes like what we are doing this one to do. The status of the task is tracked by placing the task in the appropriate column from to do this one and in progress that is doing then the last one is done. Then we stick the task by with the help of sticky notes where and which category this comes whether the task comes under to do category that is yet to do or the task comes under doing that is the task is in progress or the task is completed. Also observe how swim lanes that is a horizontal lines are used to facilitate the tracking of the task by user stories. It is important to point out that only the product owner has the authority to move the task to the done column because the product owner know whether his expectation is fulfilled or not.

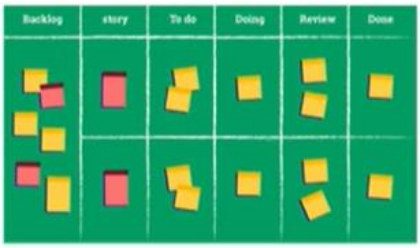
Task Boards

- Also observe how swim lanes (horizontal lines) are used to facilitate the tracking of tasks by user story.
- It is important to point out that only the product owner has the authority to move tasks to the done column.



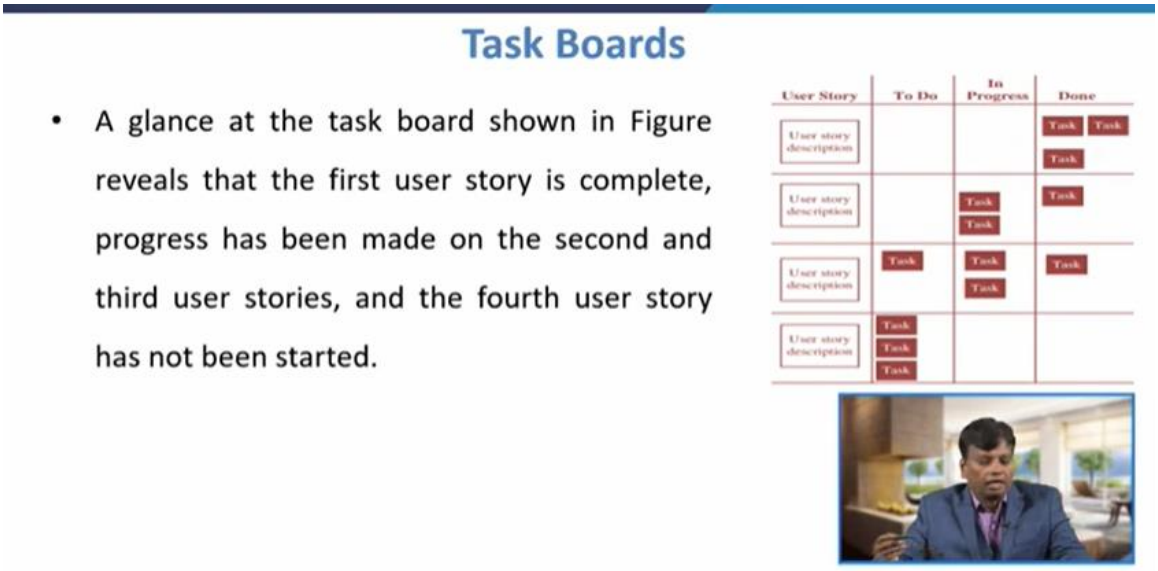
Task Boards

- The task board should be displayed in a prominent location so that it is easily viewed by all team members.
- As a visual tool, the task board provides team members with up-to-date information on the status of the sprint.

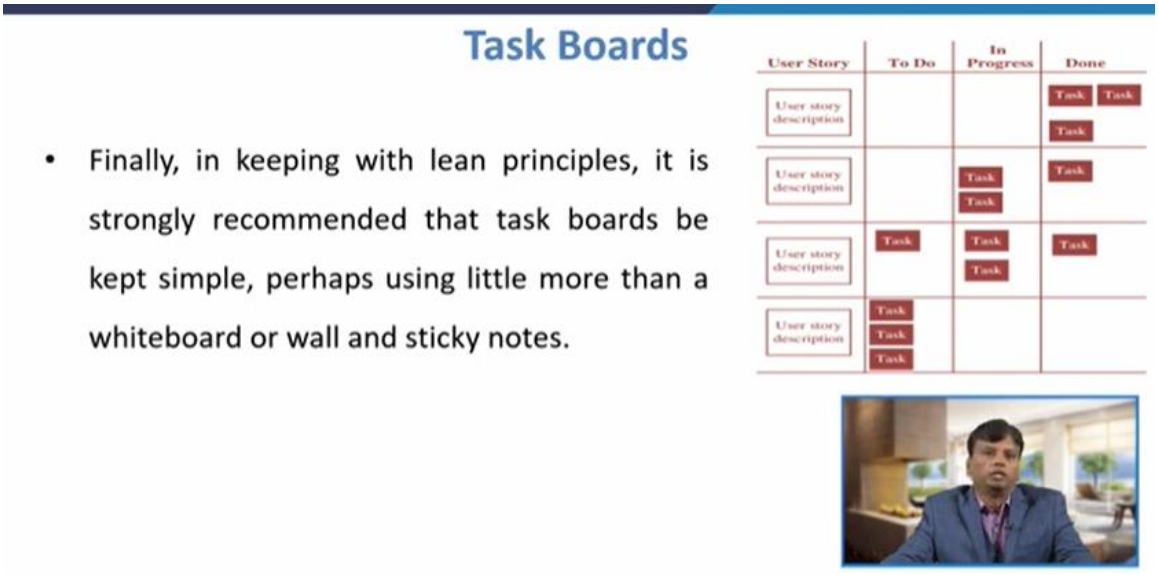


Then only he will change that the sticky note from doing that is work in progress to the done column. The task board should be displayed in a prominent location so that it is easily viewed by all team members. As a visual tool the task board provides team members with

up to date information on the status of the sprint. I have brought the another version of the task board it is simply a little simple version. A glance at the task board shown in the figure reveals that the first user story is complete.



You see this here the first user story is completed. The progress has been made on the second and the third here. Progress has been made on the second and third user stories and the fourth user story has not yet been started this one, it is not yet started. So the benefit of this task board is it is easy to visualize the status of the task. Finally in keeping with the lean principle it is strongly recommended that task board be kept simple perhaps using little more than a white board or wall and sticky notes.

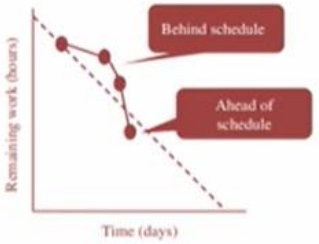


The next tool is burn up and burn down chart. This burn up and burn down charts are additional agile tools that facilitate monitoring and controlling overall project progress. Like other agile tools their popularity stems in part from their ease of interpretation due to their visual nature. First we will discuss about burn down chart. As shown in figure a burn

down chart is created with the remaining work for the sprint on the vertical axis this one.

Burndown Charts

- As shown in Figure , a burndown chart is created with the remaining work for the sprint on the vertical axis and time on the horizontal axis.
- The remaining work that needs to be completed can be expressed in time units such as hours or user story points.

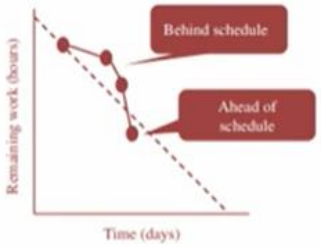


A burndown chart

Here we discuss about the remaining work to be done and the time on the horizontal axis, the time in the horizontal axis. The remaining work that needs to be completed can be expressed in time units such as hours or user story points. So the way we calculating remaining works to be done there are two way we can say how much time is remaining or how much user point has to be completed. So what is happening see initially there are assumed that there are 100 user point. So when time elapses 100 become 90, 80 and so on.

Burndown Charts

- The remaining work to finish the sprint (or project) at various points in time is plotted on the chart as shown by the solid line in Figure, which creates a downward-sloping line.
- The plotted line's slope corresponds to the progress rate, with a steeper line being associated with a greater rate of progress.



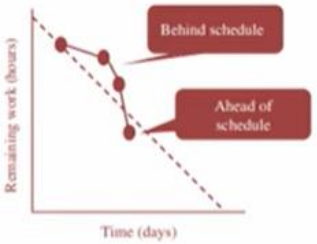
A burndown chart

The remaining work to finish the sprint or the project at various points in the time is plotted on the chart as shown in the solid line in the figure which creates a downward slope line. See this is the solid line the thick line is a solid line which has the downward slope because when the time elapses the work to be done is decreasing. So the plotted line slope corresponds to the progress rate with a steeper line being associated with greater rate of progress. For example you see this portion versus this portion. So this portion is slow the

slope is low so the progress is low but here the slope is very high that means the progress rate is high.

Burndown Charts

- Based on an estimate of the line's future slope, the project completion time can be estimated.
- Also, as shown by the dashed line in Figure, the planned progress can be included in the chart.

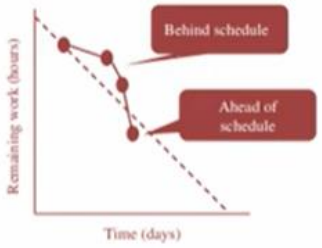


A burndown chart

So based on the estimates of the lines future slope the project completion time can be estimated. Also as shown by the dashed line in figure this one the dashed line the planned progress can be included in the chart. So the dashed line says the planned progress for example here it has to be for example this point this has to be finished here but what has happened we have taken more time there is a delay so it is behind the schedule. So if the thick line goes outside the dashed line so that means we are behind the schedule. If the thick line goes inside the towards the origin of this graph it says that we are ahead of the schedule.

Burndown Charts

- When the actual progress (solid line) is above the planned progress (dashed line), the sprint is behind schedule.
- Likewise, when the actual progress is below the planned progress, the sprint is ahead of schedule.



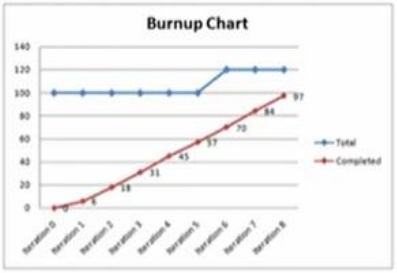
A burndown chart

So when the actual progress for example solid line is above the planned progress dashed line the sprint is behind the schedule. Likewise when the actual progress is below the planned progress the sprint is ahead of the schedule. It is very easily interpret whether we

are going ahead of the schedule or behind the schedule. Now we will discuss about the burn up charts. While a burn up chart contains the same axis as the burn down chart two different lines are plotted.

Burnup Charts

- While a **burnup chart** contains the same axes as the burndown chart, two different lines are plotted on it.
- The first set of data plotted is the work completed to date, and the second set of data is the total amount of work, including scope changes, yet to be completed.

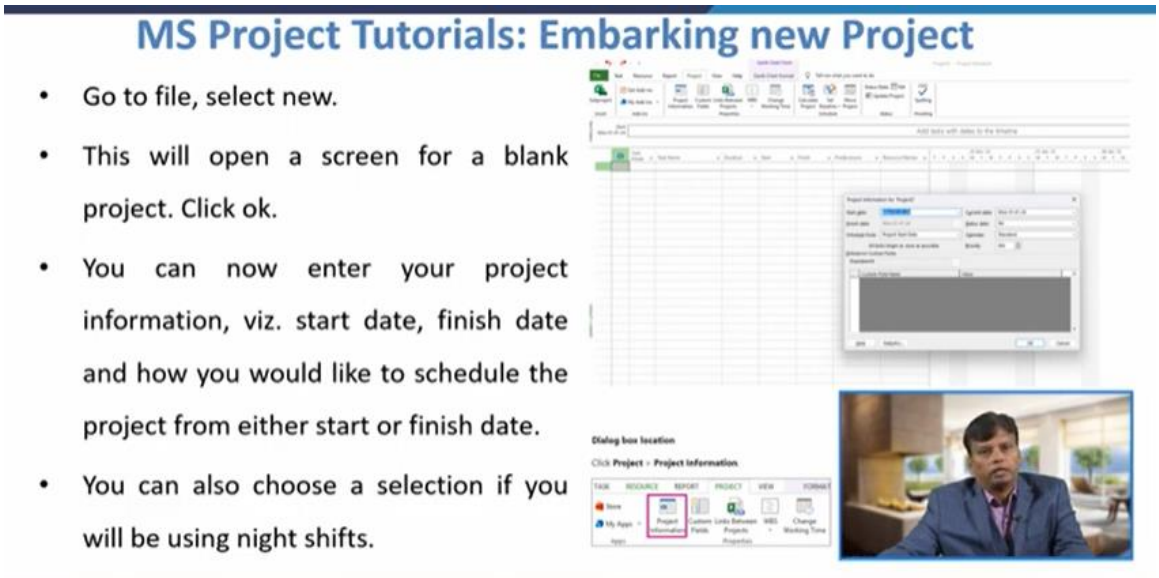


The first set of data plotted is the work completed to date and the second set of data is the total amount of work including scope changes and yet to be completed. So the blue line says yet to be completed works. Maroon color line says about work completed. You see here there are 100 point is there we are slowly increasing to reach that but you see because of scope changes the work because of rework the point the it has jumped from 100 to 120. Both burn up and burn down charts provide the project manager with a straight forward approach for monitoring and communicating overall project progress.

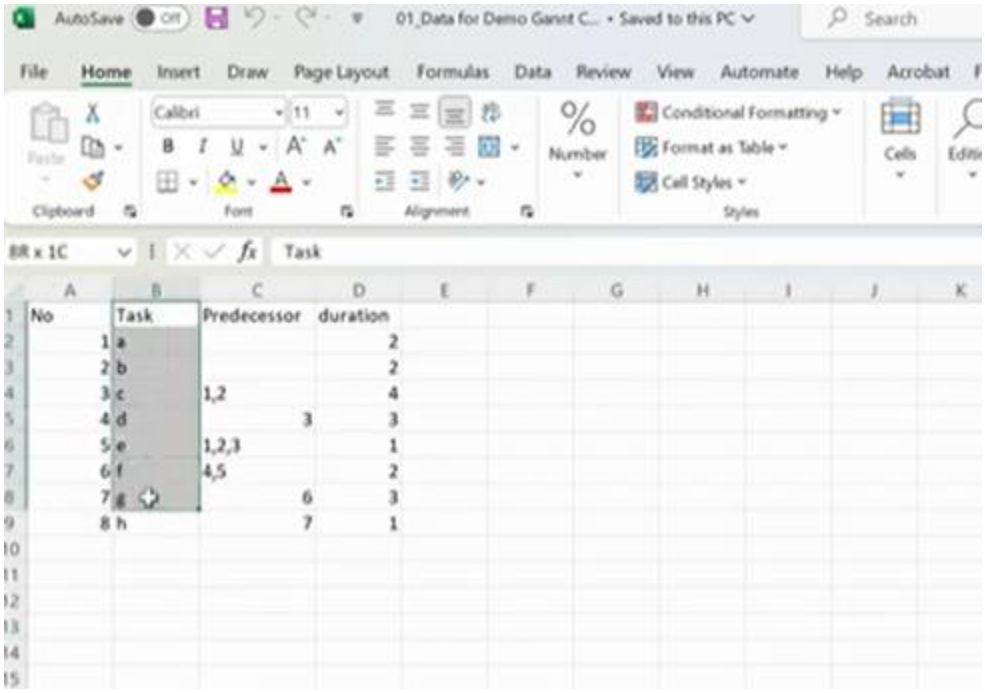
Burnup Charts

- Both burnup and burndown charts provide the PM with a straightforward approach for monitoring and communicating overall project progress.
- The choice of one chart versus the other is a matter of personal preference.

The choice of one chart versus the other chart is matter of personal preference. So far I have discussed about agile tools. Now I will give you a demo on MS projects. First we will discuss about how to create a new project. Then I will discuss how to do a burn chart.



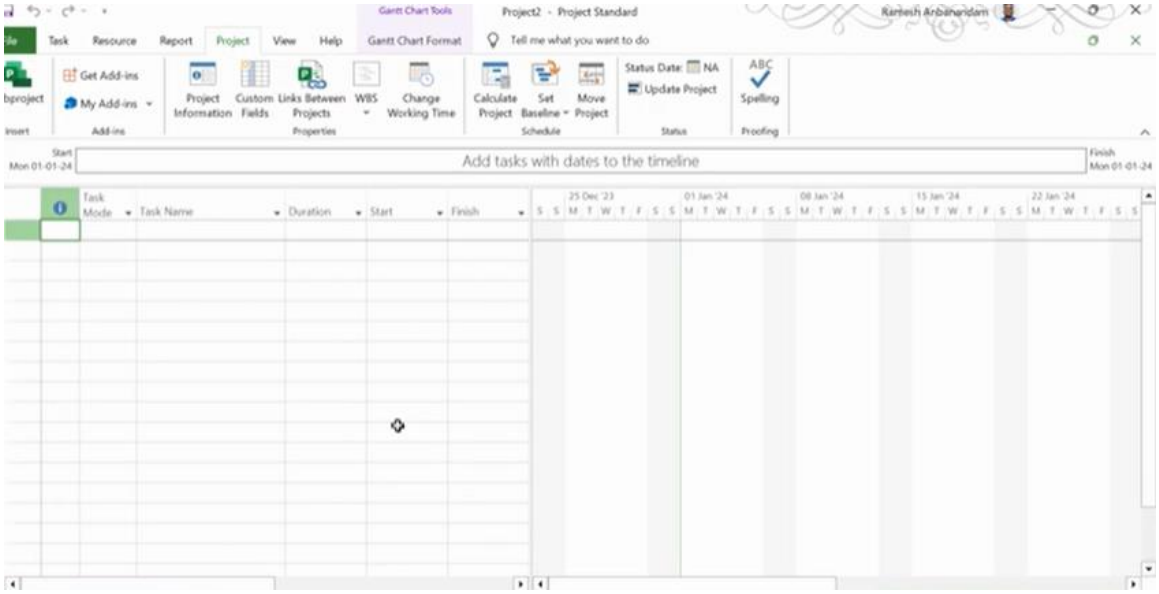
There how to find out the critical path. There how to find out various tables and so on. So now we will go to MS project environment. With the help of a sample problem I will explain various features of MS project software. Dear students I have brought the problem.



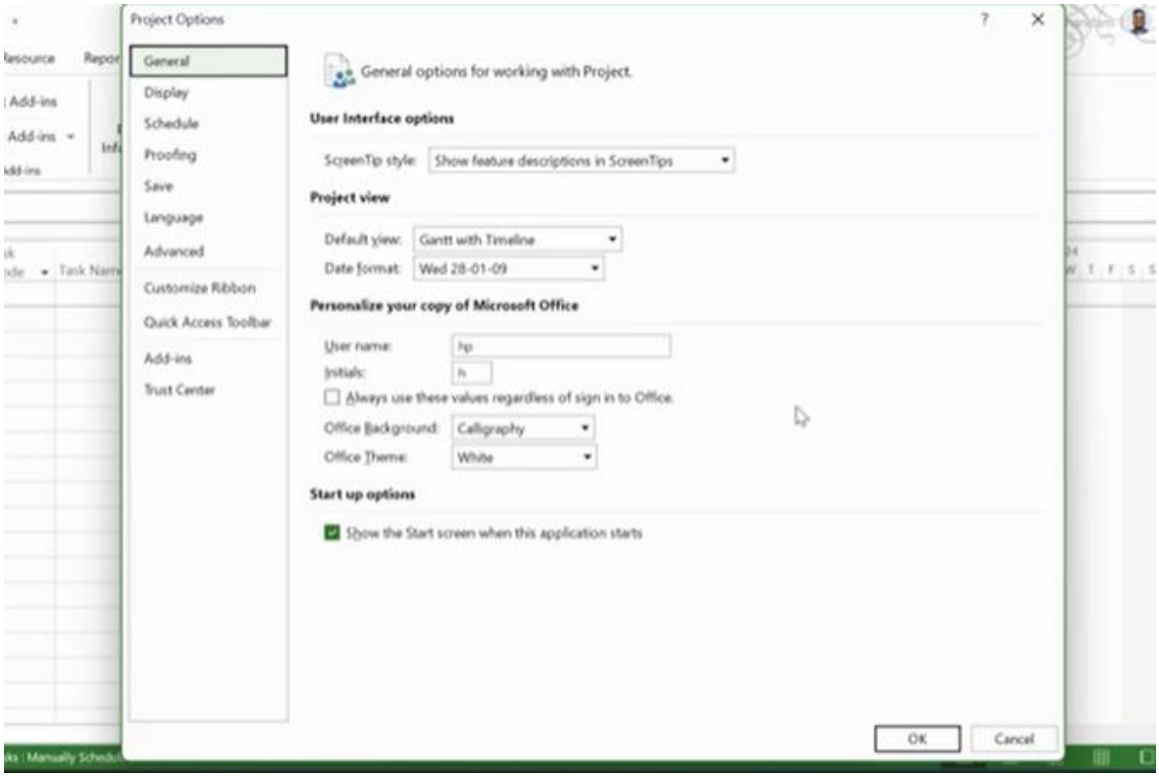
So I have entered the task A, B, C, D, E, F, G, H. I have entered the predecessors and I have entered the duration. You see that before the task I have given a number 1, 2, 3, 4, 6 because in the MS project when you specify the predecessors you cannot give the alphabets you have to provide the serial number of the task. So for example 1, 2 it represents activity A and B is predecessor for activity C. Similarly for activity D, C is a predecessors.

So instead of C I am writing 3. So activity E what are the predecessors? A, B, C. So that A, B, C I am representing 1, 2, 3 and so on. So now I have opened a MS project. So I have

gone for blank project. So as soon as you open there are two set of displays coming.

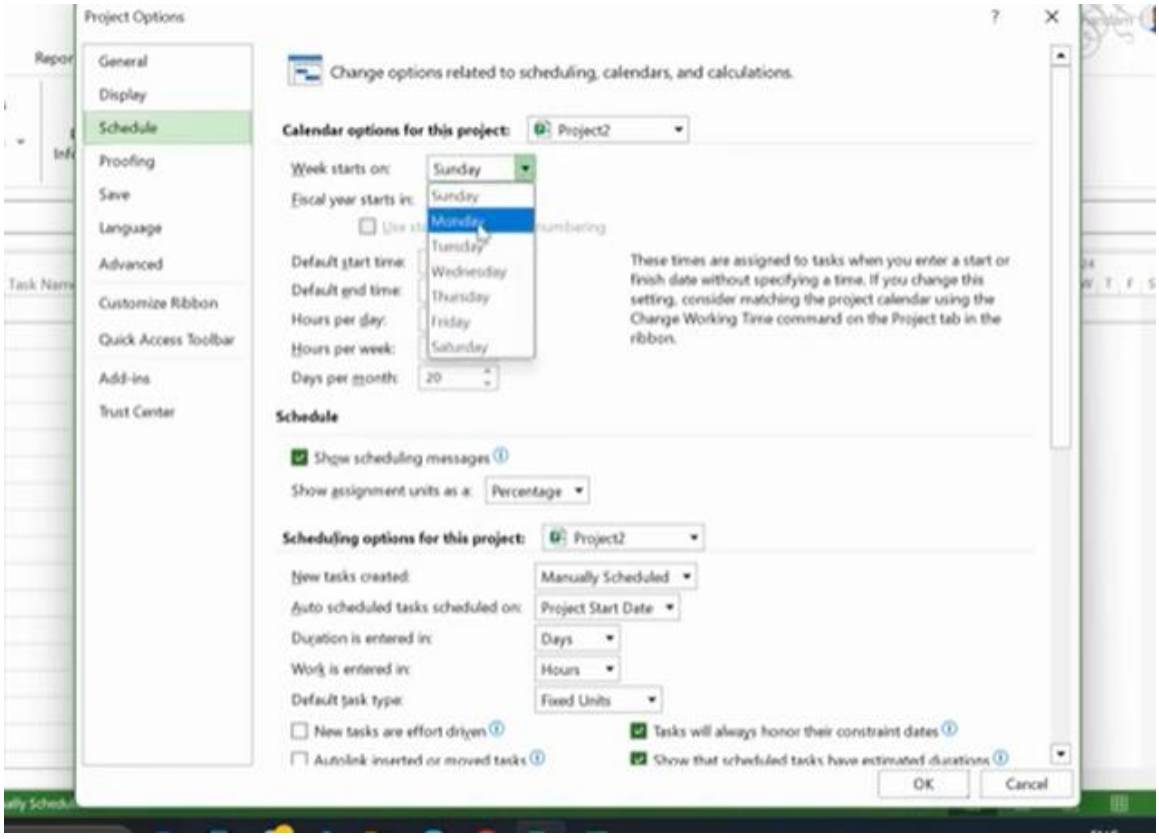


One the left hand side it is the entry view and the right hand side you will get the burn chart view. So what I am going to do? First you have to go to file then you go to options. There you can set lot of features globally for all projects. So see date format for example here you can change it. For example suppose I can give this one 28 January 2009.

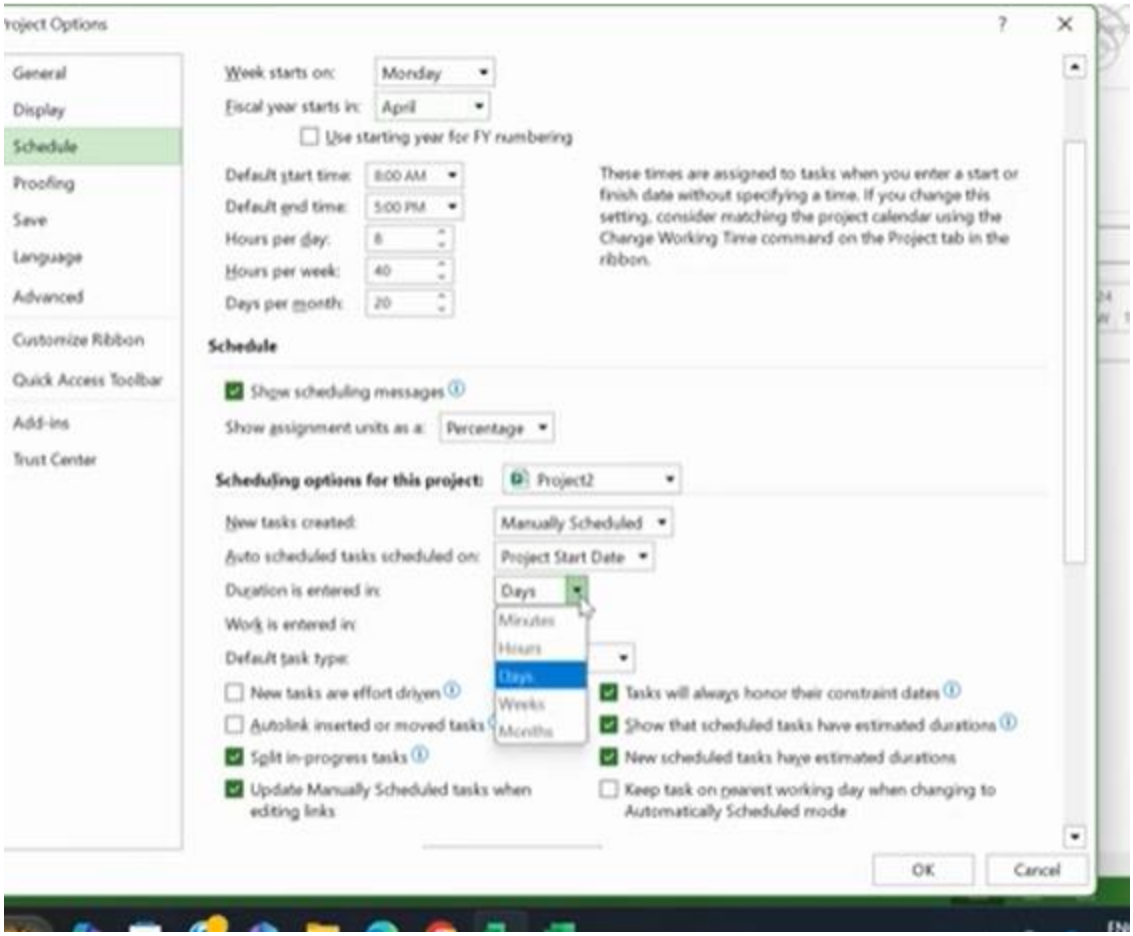


Then you can go to display. So display currency for example US dollar is there. If you want you can go to Indian currency. Then go to schedule. Here schedule you see the work starts on we will keep on Monday, the work starting on Monday. The fiscal year starts on

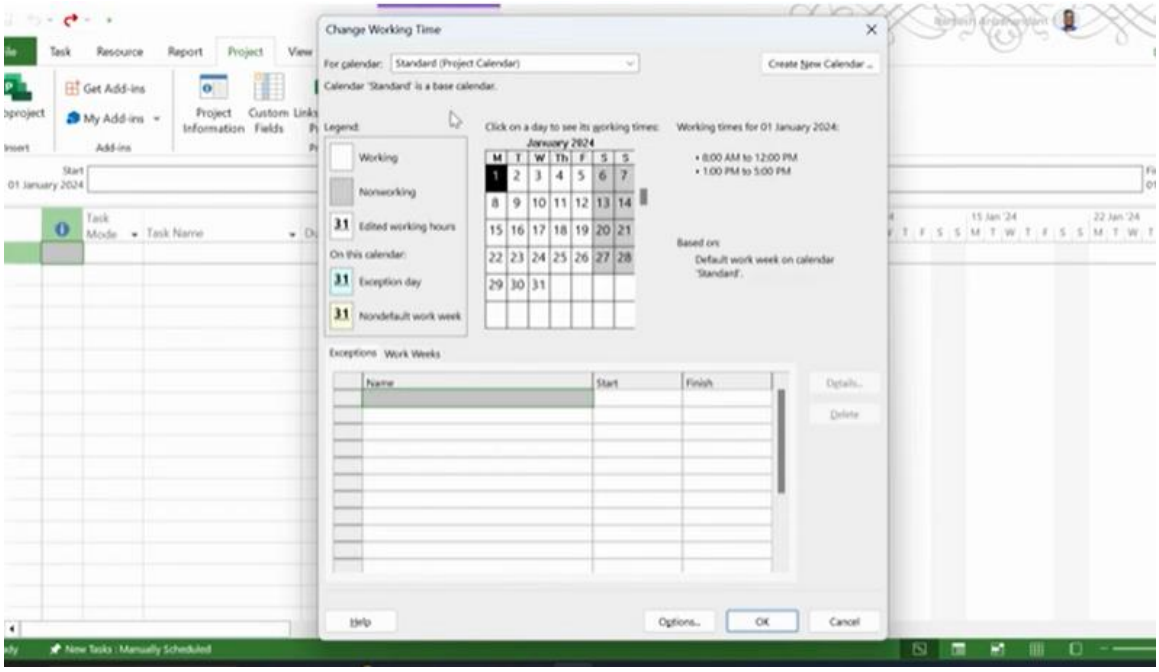
April Indian context.



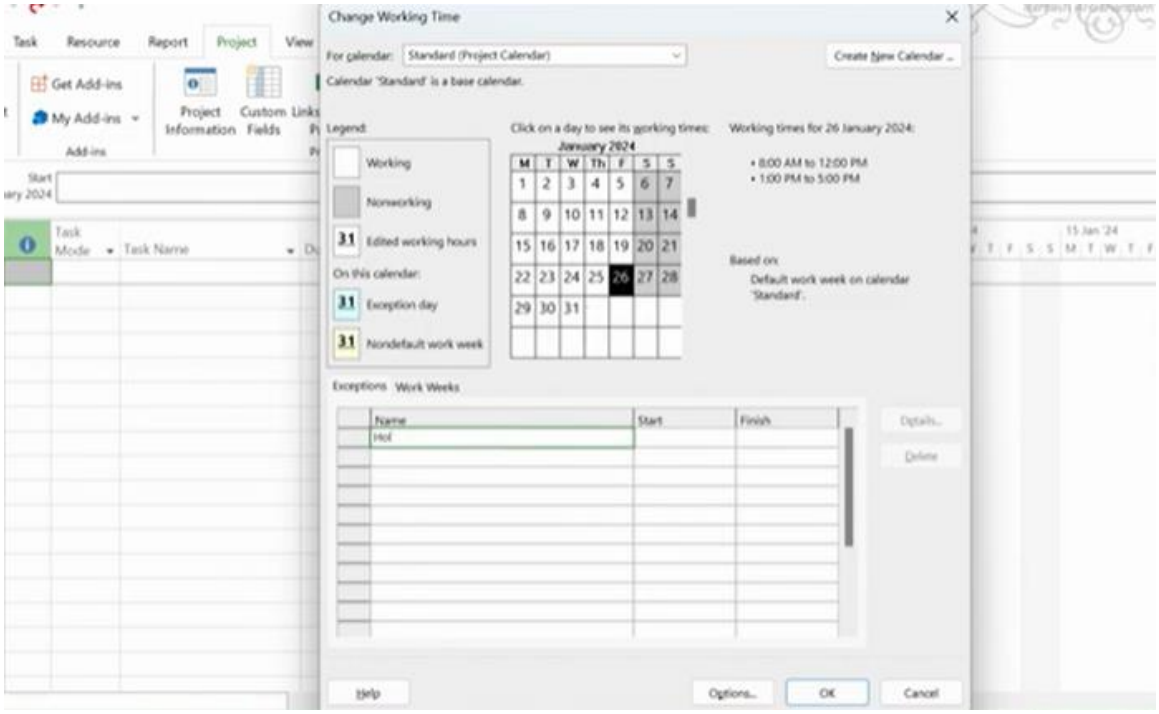
So the default starting time is 8 am, default end time is 5 pm. Hours per day is 8, hours per week is 40 hours and days per month is 20. This you can increase it. Then the scheduling no problem it is a manually scheduling we can change it to auto scheduling also I will tell explain how to do the auto scheduling. Then the duration is entered by default it is days.



You can enter as a minutes, hours, weeks, months but default is days. It is only for our illustration purpose. Then I press ok. Once you go for project information the next one is in the project tab there is a change working time. So here what you can do you can say that what are the days or holidays or you can define or your own calendar also.

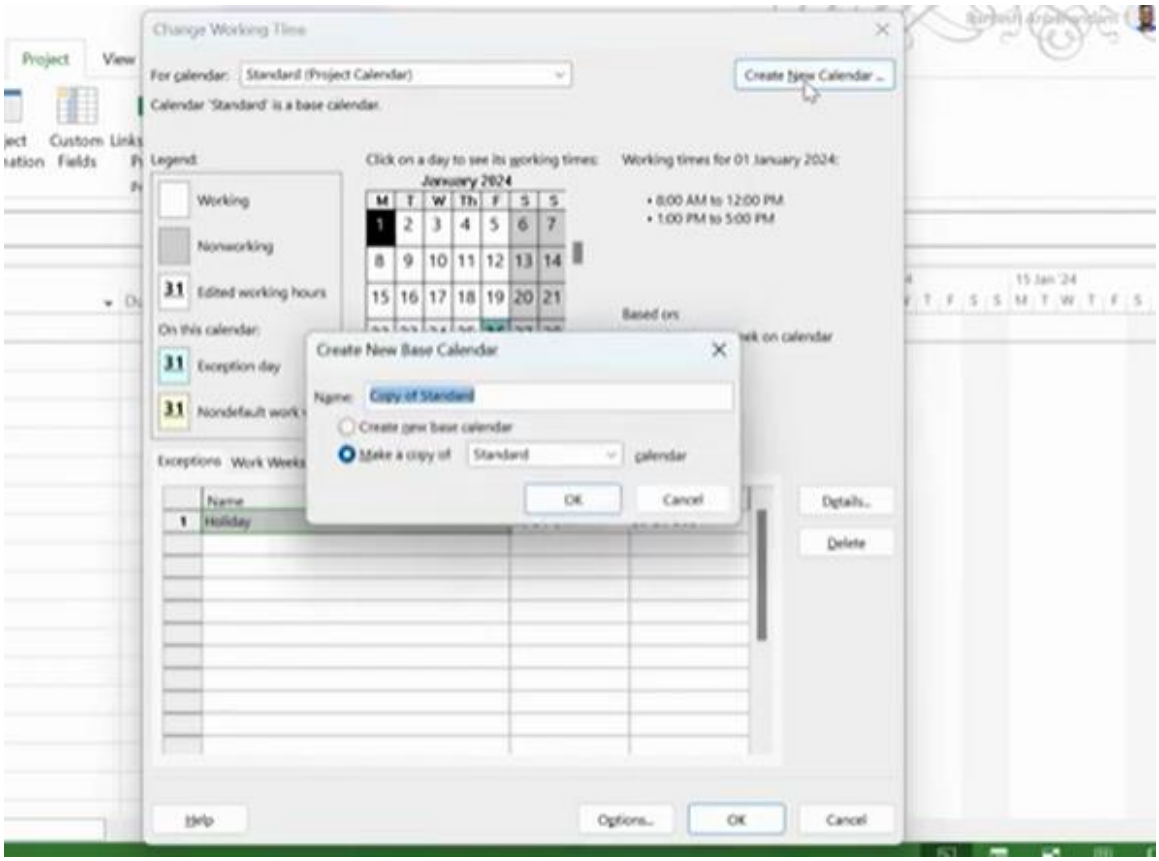


So now what is happening here? So I have specified my working day is Monday to Friday. So Saturday, Sunday is holiday. Suppose if I want to a particular day for example this is January 26. In India it is Republic day it is a holiday.



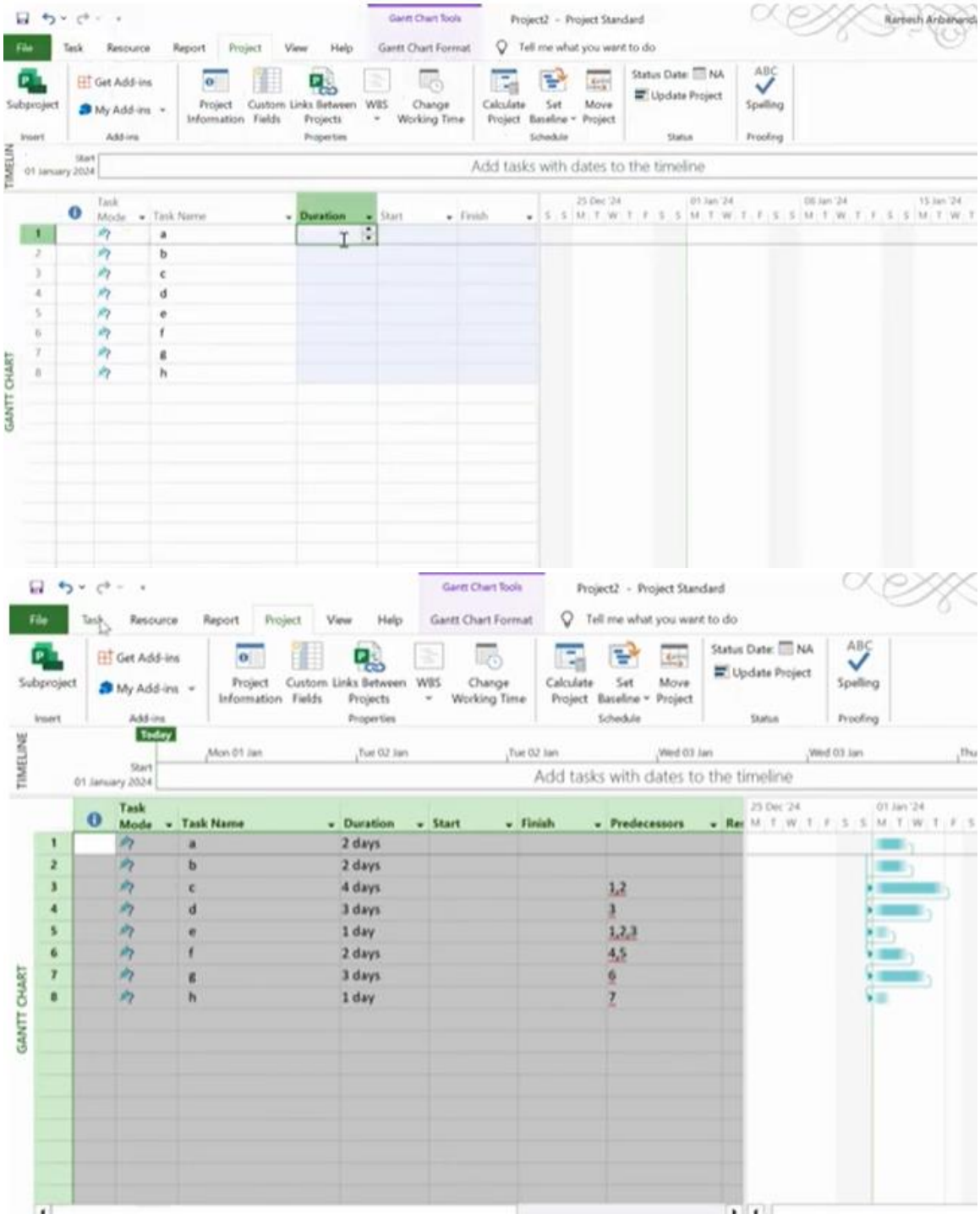
So you can here you can write holiday. Here you can specify that holiday is one day or say if it is some other long holiday say Christmas holiday you can put one week. So here you can change it but at present it is only one day. When you press ok you see that that date January 26 is the holiday. So this is the way project change working time you can specify and you see that there are different calendars there 24 hours calendar is there night

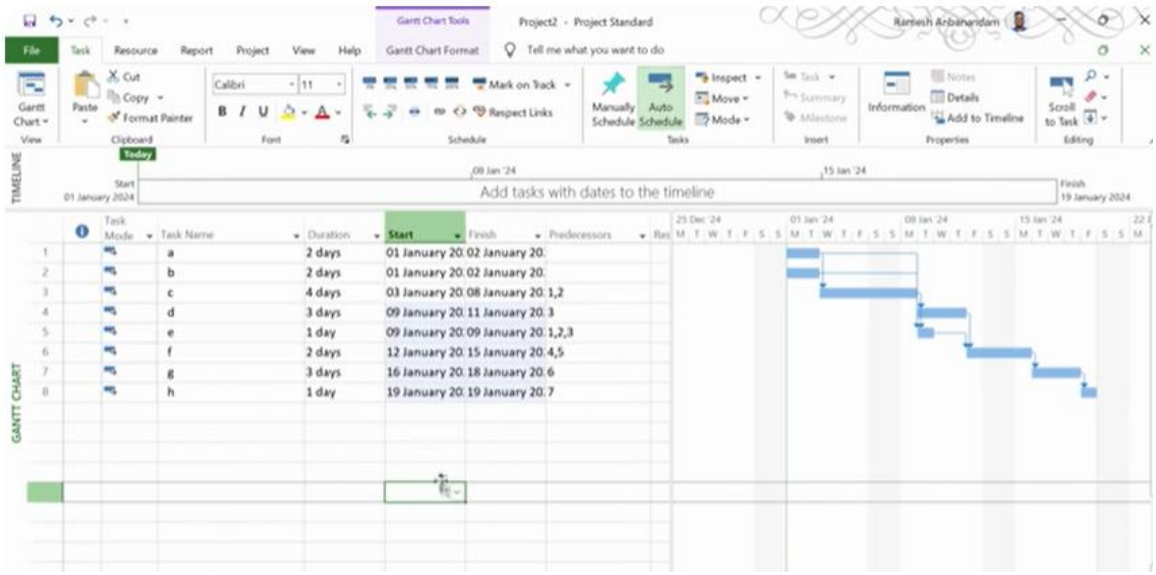
shift is there standard project calendar is there and you see that right hand side you can create a new calendar also. So when you go for new calendar for example you are having a supplier that supplier is from some other country that country assume that the Friday is holiday.



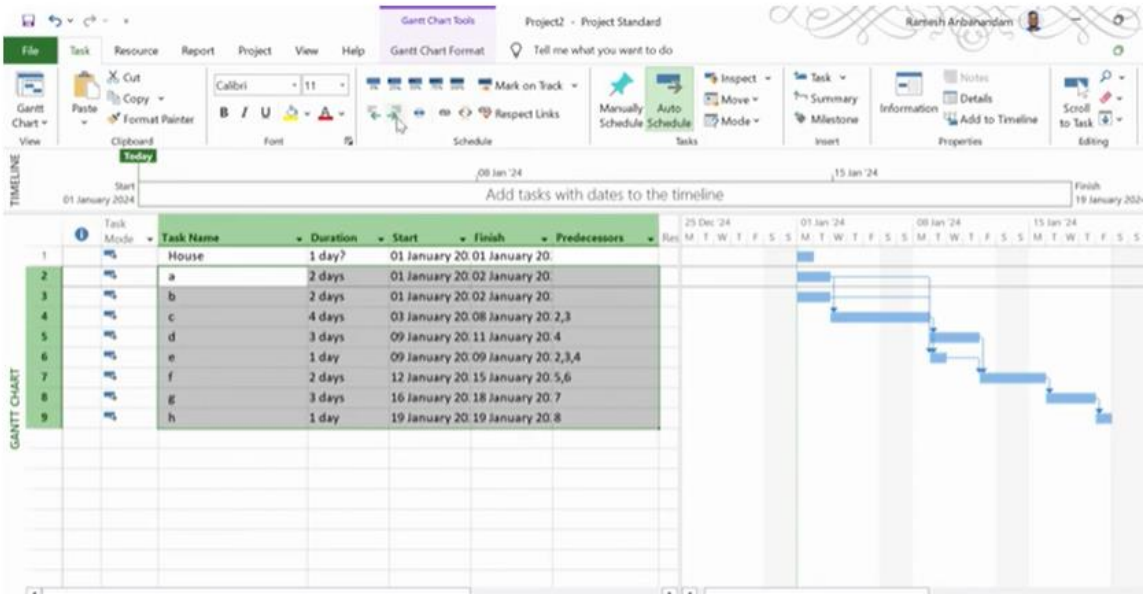
So you can customize that. So then you can give the name of that calendar also for example supplier calendar. So this will be useful when you allocate resources but at present we are not going to that. So I am cancelling this then I press ok. So here you see that there is a there is a diagonal when you click it this is a very important shortcut you can select all the cells. So the I is the different things will be indicative there it will be informed there.

First we will see task mode. So first we will write that is the whether the task mode is whether we are doing scheduling manually or scheduling automatically. So first I am going to enter the task name I go to my because already I have data so these are my task I copied then I have pasted. The next one I have project duration I copied this then I am going to project so duration by default days it is I have copied and the next one is the predecessors. So you can drag this cell to right hand side it is similar to excel so you can paste it.

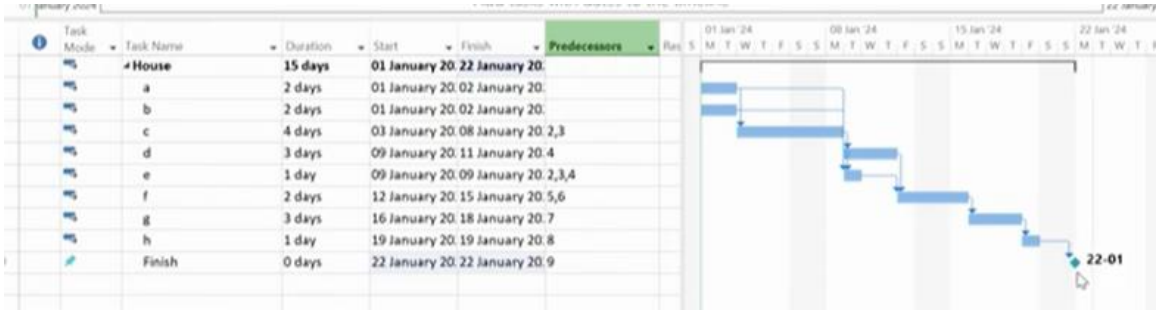

Gantt Chart Tools
Project2 - Project Standard
File
Task
Resource
Report
Project
View
Help
Gantt Chart Format
Tell me what you want to do
Subproject
Get Add-ins
My Add-ins
Project Information
Custom Fields
Links Between Projects
WBS
Change Working Time
Calculate Project
Set Baseline
Move Project
Status Date: NA
Update Project
Spelling
Insert
Add-ins
Properties
Schedule
Status
Proofing
TIMELINE
Start
01 January 2024
Add tasks with dates to the timeline
GANTT CHART
Task Mode
Task Name
Duration
Start
Finish
25 Dec '24
01 Jan '24
08 Jan '24
15 Jan '24
1 a
2 b
3 c
4 d
5 e
6 f
7 g
8 h
Today
Mon 01 Jan
Tue 02 Jan
Tue 02 Jan
Wed 03 Jan
Wed 03 Jan
Task Mode
Task Name
Duration
Start
Finish
Predecessors
1 a 2 days
2 b 2 days
3 c 4 days 1,2
4 d 3 days 3
5 e 1 day 1,2,3
6 f 2 days 4,5
7 g 3 days 6
8 h 1 day 7

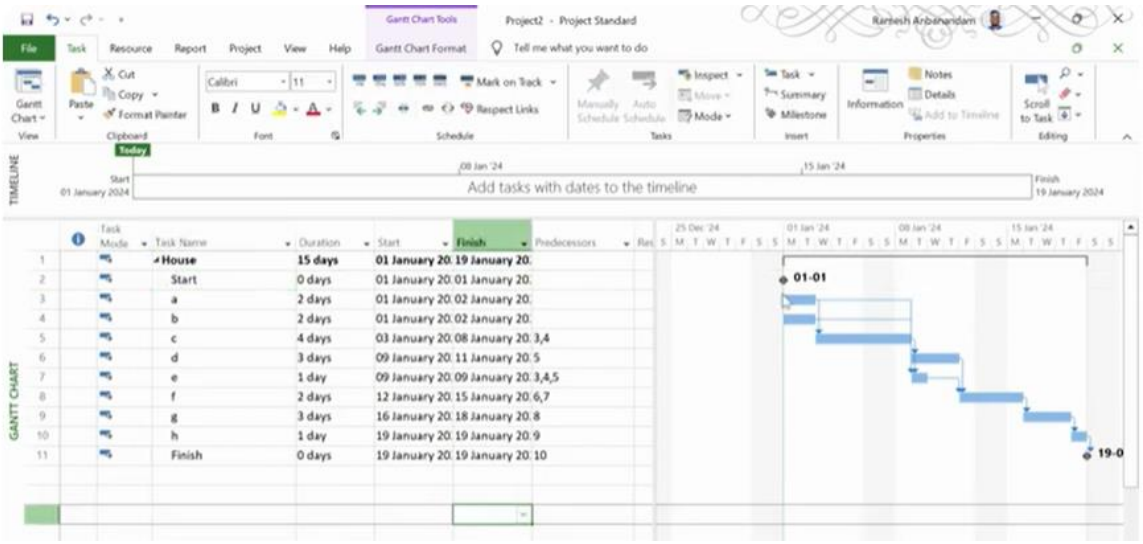


I have entered the predecessors. Now one more thing you see that this is you see that this is manually scheduled. So what you have to do you have to select quick shortcut you select this diagonal box then go to task you select auto schedule you see that when you auto schedule it you see it is January 1st it is starting and it is finishing on 15, 16, 17, 18, 19 it is finishing on January 19 that is one more thing. Now other things if you want to enter a new cell so click here you right click so insert a task so this I am giving say the project name is construction house suppose a given house construction. So this you can go task you can go to auto schedule so what happening here under the house there are many activities many task is there so what I can do I can select all the cells then you go to you see that there is a intent, intent task when you enter this you see that under the house there are many task is there not only that you see that for completing all the task it is going to take 15 days. So the completing this project excluding Saturday, Sunday it will take 15 days.

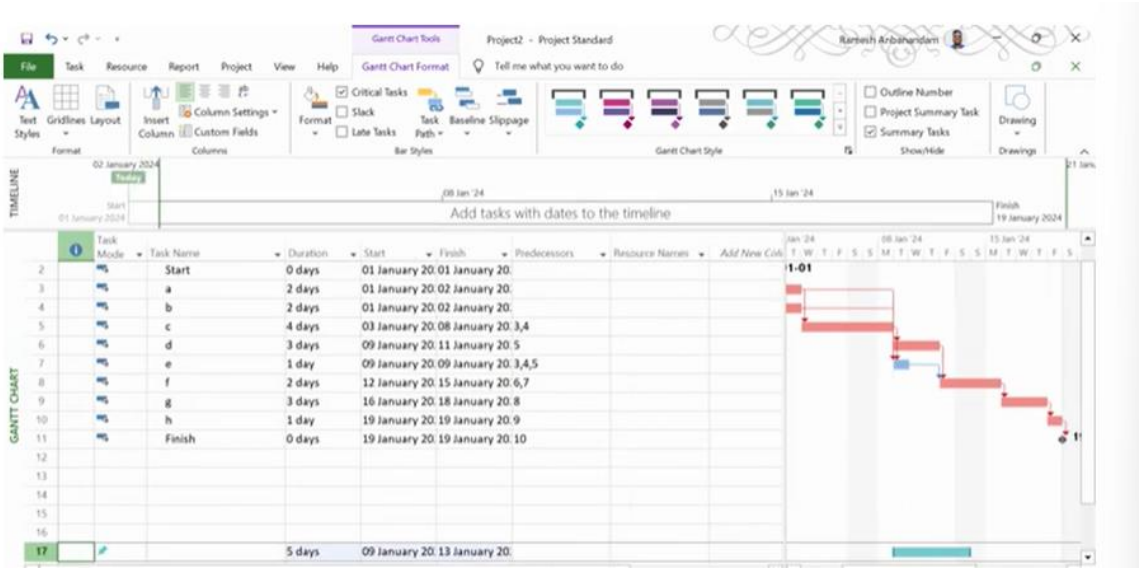


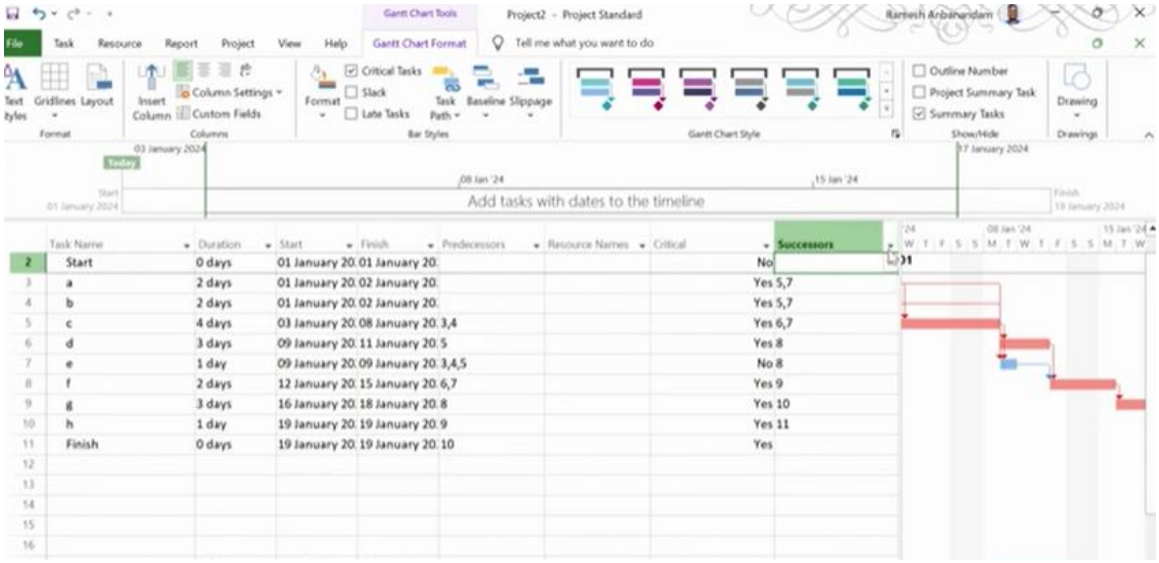
So it will start on January 1st and finish on January 19 that is a one useful of this indentation and so far we have seen Gantt chart suppose if you want to know the typical milestone of the project. So for that say you can write one project say finish, finish it is going to take only 0 days and I have to mention 9 is the predecessors. You see that there is a diagonal is there so diagonal represents it is a milestone of the project. So project milestone will not consume the any resources it is only for indication whether we completed the task or not. Similarly, you can go for start also you can click here insert your task you call it as start it will take only 0 days and this everything has to be auto scheduled and see that there is a diagonal symbol is there that says the starting point and when you this is start.





See that there is a diamond symbol is there that diamond symbol says it is the starting point and other thing when you enter the new cell see your precedence relationship is not affected it is just it has gone one cell below that you need not worry about that. So we have constructed the Gantt chart and other thing that the question it was asked how to find out the critical path. For that what you have to do you go to double click this Gantt chart format you check this box critical task. Now the red lines this shows the critical activities and one more thing when you drag on the right hand side you can add a new cell also the new cell there are two things for example I want to know what are the critical activities. So C R C I you see that I have seen what are the critical activities so activity A is critical activity B is critical activity C is a critical activity we can see the critical activities also and not only that when you go here there are many other options there instead of critical activities suppose I want to know.





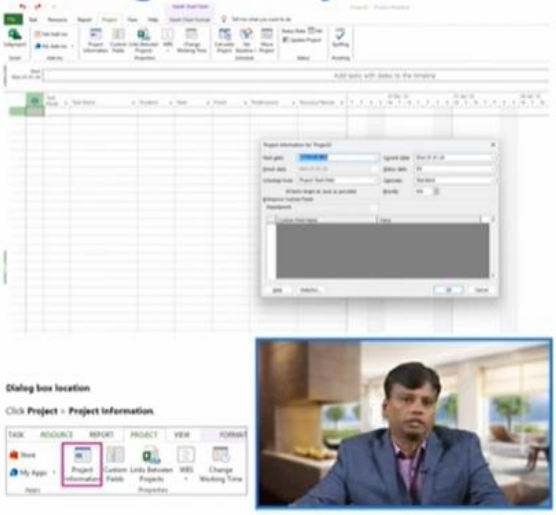
	Task Name	Duration	Start	Finish	Predecessors	Resource Names	Critical	Successors
2	Start	0 days	01 January 20.	01 January 20.			No	
3	a	2 days	01 January 20.	02 January 20.			Yes	5,7
4	b	2 days	01 January 20.	02 January 20.			Yes	5,7
5	c	4 days	03 January 20.	08 January 20.	3,4		Yes	6,7
6	d	3 days	09 January 20.	11 January 20.	5		Yes	8
7	e	1 day	09 January 20.	09 January 20.	3,4,5		No	8
8	f	2 days	12 January 20.	15 January 20.	6,7		Yes	9
9	g	3 days	16 January 20.	18 January 20.	8		Yes	10
10	h	1 day	19 January 20.	19 January 20.	9		Yes	11
11	Finish	0 days	19 January 20.	19 January 20.	10		Yes	

I want to know predecessors so click predecessors sorry successors now I have given we know the predecessors of each activity also then we know what are the successors of each activity also like that there are many options you can customize this table and other things suppose I want to know the earliest starting time earliest finishing time so what we can do you can go to view so there is a table option is there so when you click on schedule so it shows that for each activity what is the starting time finishing time what is the latest starting time latest finishing time and what is the slack and then what is the free slack all the information are provided. And other one other important shortcut is when you right click this first column you see there is options called view bar when you click it all the options is appearing in the form of picture, in the form of icon it will be very useful tool to see various tables if you do not want to this right click you minimize this view bar so what we have done we have found the critical path suppose if you want to know more we find what are the critical activities and so on suppose if you want to know the project completion time so you go to project go to project information you select on statistics you see that it provides starting date and finishing date. So the MS project it has combined both our MS excel and the project management tools so it is very useful and easy to follow the software for the managing a large project. The first task is starting here embarking a new project so what we have to do you go to file and select new so this will open a screen for blank project you click ok you see that I have done then you see here file then there will be option for a new project you can now enter your project information that is start date you see here I given start date finish date and how would you like to schedule the project from either start or finish date you can also choose a selection if you will be using the night shift so here what you have to do so first you have to go to project then you have to go to project information there you can enter all the details not only that when you go for project information when you click the option of statistics so that will give you the project starting date and project finishing date because already I have completed the project so from that project obvious answer is when the project has to be started when the project

should be finished project completion time so project starting time is given project completion time is given. Now I will explain how to do a GANTT chart already in the previous lecture I have discussed there I have given you very brief introduction now we will go in detail about constructing the GANTT chart so task duration in days and precedence are listed in the following table so the task is given A, B, C, D, E, F, G, H the predecessors are given and the duration of the activity is also given so we are going to answer three questions first construct a GANTT chart using Microsoft project assuming the default five day work week calculate the critical path of the project then calculate the project duration.

MS Project Tutorials: Embarking new Project

- Go to file, select new.
- This will open a screen for a blank project. Click ok.
- You can now enter your project information, viz. start date, finish date and how you would like to schedule the project from either start or finish date.
- You can also choose a selection if you will be using night shifts.



Gantt Chart

- Task, duration in days, and precedence are listed in the following table

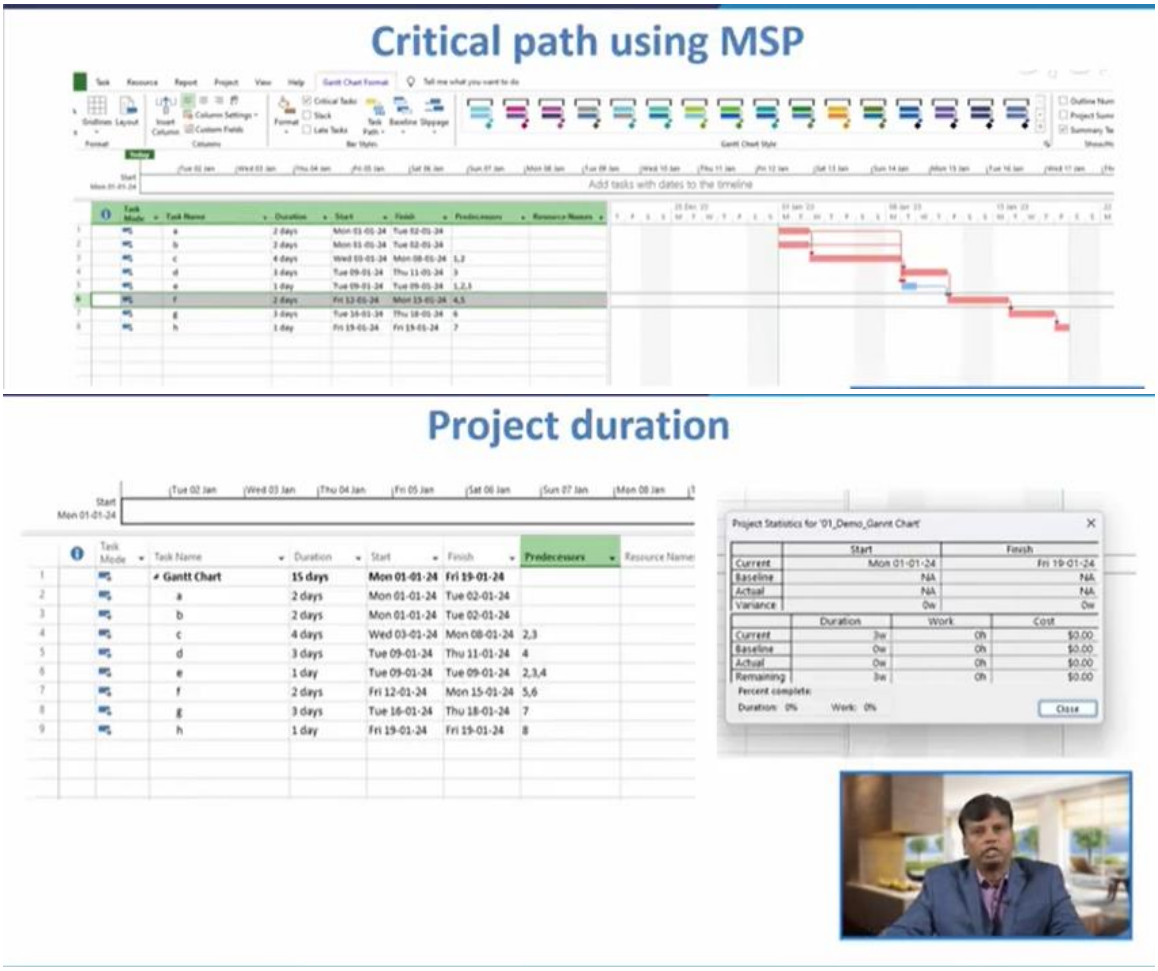
No	Task	Predecessor	Duration in days
1	a		2
2	b		2
3	c	1,2	4
4	d	3	3
5	e	1,2,3	1
6	f	4,5	2
7	g	6	3
8	h	7	1

- Construct a Gantt Chart using MSP
- Assuming the default 5-day workweek, calculate the critical path of the project
- Calculate project duration

Gantt Chart

- Select Gantt Chart view from the view menu.
- You'll have a spreadsheet where you can now enter information about all the activities i.e., task name, duration, start date, end date, predecessors and various other fields.
- You can enter the required information in two ways: in a spreadsheet or when you double click on a cell, you get an up window in which you can enter all the information of that particular activity.
- For predecessor activity, you need to write the activity number.
- The SW itself will calculate the start and end date.
- Now the Gantt Chart is complete.

So what I have done select GANTT chart view from the view menu you will have a spreadsheet where you can now enter information about all the activities like task name, duration, start date, end date, predecessors and various other fields you can enter the required information in two ways one is in a spreadsheet or when you double click on the cell you will get a window in which you can enter all the information of the particular activity for predecessors activity you need to write the activity number that is more important you should not use a text you should use a number so the software itself will calculate the start and end date now the GANTT chart is complete. So I have brought the GANTT chart here screenshot of the GANTT chart after that the question is to find the critical path so when you go the GANTT chart format there is option see here there is option to check that box show the critical path there you can see once you check that box you can see that the critical path are highlighted in the red color.



Then the next question is asked is the project duration so when you go to project information there when you click on statistics then you will get the full information starting date, finishing date so that is the project duration. So in this lecture I have discussed about agile tools for tracking project progress there I talked about three tools task board, burn up chart and burn down chart finally I have explained some features of MS project two things I have done here one is how to start a open a new project how to fix the how to fix the date for the calendar then I have taken a sample problem for constructing the GANTT chart there I have found out what is the critical path then what is the total project completion time. Thank you. Thank you.