

Project Management

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Week: 5

Lecture 23 Gantt Chart & Scheduling with scrum

Dear students, in this class I am going to discuss about Gantt chart and scheduling with Scrum. In the previous class I have discussed about risk analysis with simulation for scheduling. So, now we are discussing about Gantt chart and scheduling with Scrum. So, the agenda for this lecture is what is the Gantt chart and what are the benefits and weakness, I will show you an example. Then with the help of MS project, I am going to give a demo for two problems. After that I will explain how to schedule an agile project that is scheduling with Scrum.

Part-II

Project Planning

- Traditional project activity planning
- Agile project planning
- Coordination through integration management
- Project feasibility analysis
- Estimating project budgets
- Project risk management
- Quantitative risk assessment methodologies
- Critical path method (CPM)
- Programme evaluation and review technique (PERT)
- Risk analysis with simulation for scheduling
- Gantt Chart & Scheduling with scrum
- Crashing a project
- Resource loading
- Resource levelling
- Goldratt's critical chain

Course outline



Agenda

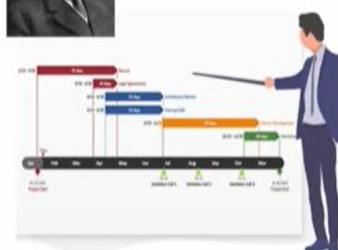
- Gantt Chart
 - Benefits and Weaknesses
 - Example
 - Demo in MS Project Software
- Scheduling with scrum
- Techniques for scrum scheduling- Poker estimation



There I am going to explain one techniques for a Scrum scheduling called poker estimation. Now, I will go to the Gantt chart. So, one of the oldest but still one of the most valuable methods for presenting the project schedule information is Gantt chart, is the person who developed, professor who developed this. So, developed around 1917 by Henry L. Gantt, a pioneer in the field of scientific management. The Gantt chart shows the planned and actual progress for several tasks displayed as bars against the horizontal timeline. This is an example of Gantt chart. It is particularly effective and easy to read method for indicating the actual current status of each of a set of task compared to the planned progress for each item of the set. As a result, the Gantt chart can be helpful in expediting, sequencing and reallocating resources among task as well as in the valuable and but mundane job for keeping track of how things are going.

Gantt Chart

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- Developed around 1917 by Henry L. Gantt, a pioneer in the field of scientific management.
- The Gantt chart shows planned and actual progress for several tasks displayed as bars against a horizontal timescale.



Gantt Chart

- It is a particularly **effective and easy-to-read method** of indicating the actual current status for each of a set of tasks compared to the planned progress for each item of the set.
- As a result, the Gantt chart can be **helpful in expediting, sequencing, and reallocating resources among tasks, as well as in the valuable but mundane job of keeping track** of how things are going.



Charts usually contain number of special symbols to design or highlight items of special concern to the situation being charted. It is essential for a student to be able to understand just what is that network and Gantt chart shows. One understanding is gained, once understanding is gained, software is easier, faster and given a project of a size that reflect reality far more cost effective. What are the benefits of this Gantt chart? First, even though they may contain a great deal of information, they are easily understood. While they do require frequent updating as does any scheduling or controlling device, they are easy to maintain as long as task requirement are not changed or major alternation of the schedule are not made.

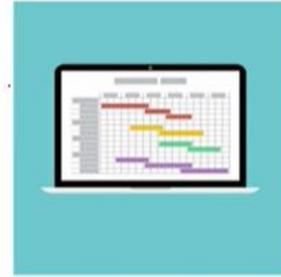
Gantt Chart

- Charts usually contain a number of special symbols to designate or highlight items of special concern to the situation being charted.
- It is essential for the student to be able to understand just what it is that networks and Gantt charts show.
- Once understanding is gained, software is easier, faster, and given a project of a size that reflects reality, far more cost-effective.



Benefits of Gantt charts

- First, even though they may contain a great deal of information, they are easily understood
- While they do require frequent updating (as does any scheduling/control device), they are easy to maintain as long as task requirements are not changed or major alterations of the schedule are not made
- Gantt charts provide a picture of the current state of a project.
- They are as easy to construct as a network.



source: Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

Gantt chart provide a picture of the current state of your project. They are as easy to construct as a network. What are the weakness of this Gantt chart? If your project is complex, a large set of activities, it may be very difficult to follow multiple activity path through the project. So, Gantt chart are powerful devices for communicating to senior management, but networks are usually more helpful in the hands on task of managing the project. Now, we will go with the Gantt chart example.

Weakness of Gantt charts

- If a project is complex with a large set of activities, it may be very difficult to follow multiple activity paths through the project
- Gantt charts are powerful devices for communicating to senior management, but networks are usually more helpful in the hands-on task of managing the project.



source: Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

Gantt Chart-Example

- Its major strength is that it is easy to read
- All popular project management software will prepare Gantt charts, and most have some options available for customization

It is a major strength is that easy to read. So, popular project management software will prepare Gantt chart and most have some options available for customization. For example, in this class, I am going to explain how to use MS project software for constructing this Gantt chart. On balance, ease of construction and ease of use have made the Gantt chart most popular method for displaying a project schedule. Nonetheless, activity on node network is still most useful for the project manager to exercise control over the schedule and the viewer may be misled if the Gantt chart is not read carefully or if it does not contain all appropriate information.

Gantt Chart-Example

- On balance, ease of construction and ease of use have made the Gantt chart the most popular method for displaying a project schedule.
- Nonetheless, an AON network is still most useful for the PM to exercise control over the schedule, and the viewer may be misled if the Gantt chart is not read carefully or if it does not contain all appropriate information (Wilkins, 1997)

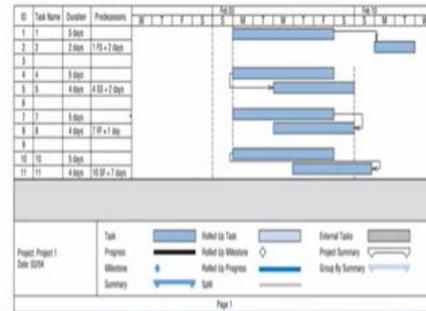


Before constructing the Gantt chart, there are certain precedence diagram restrictions that you need to understand. What are the precedence diagram restriction is first is the finish to start. So, what is the meaning of this finish to start is that look at this here. So, there are activity one day activity one has five days Monday, Tuesday, Wednesday, Thursday, Friday, this one. So, after finishing this activity two will start.

Precedence Diagramming Restrictions

Finish to start

- Activity 2 must not start before Activity 1 has been completed.
- This is the typical arrangement of an activity and its predecessor.
- Other finish–start arrangements are also possible.
- If the predecessor information had been written “1FS + 2 days,” Activity 2 would be scheduled to start at least 2 days after the completion of Activity 1, as shown in Figure .
- For instance, if Activity 1 was the pouring of a concrete sidewalk, Activity 2 might be any activity that used the sidewalk.



Source: Meredith, J. R., Shafer, S. M., & Mantel Jr., S. I. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

That is why one finish to start plus two days. So, finish this activity one after two day, Saturday, Sunday, again, the second activity will start. So, that is the meaning of finish to start. One thing you should remember that you see the direction of this arrow in the Gantt chart. So, it is starting from finish and ending at the start.

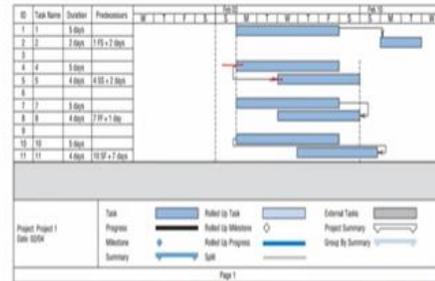
So, that is called finish to start. So, activity two must not start before activity one has been completed. So, after completion of activity one only the activity two can start. This is the typical arrangement of an activity and its predecessor. Other finish start arrangement also possible.

So, then the for example, if the predecessor information had been written 1 FS + 2 days, what it implies activity two would be scheduled to start at least two days after the completion of activity one as shown in this figure. For instance, if activity one was the pouring of a concrete sidewalk. So, activity two might be any activity that used the sidewalk because there is a time required to set the concrete that is why the two days. The next conversion is start to start this example you see here also starting this arrow diverge, arrow also starting point. So, for example, activity five cannot begin until activity four has been underway for at least two days.

Precedence Diagramming Restrictions

Start to start

- Activity 5 cannot begin until Activity 4 has been underway for at least 2 days.
- Setting electrical wires in place cannot begin until 2 days after framing has begun.



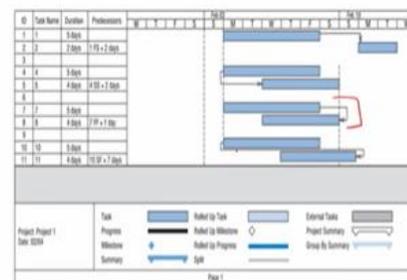
So, how we are writing this start to start plus two days. So, that means, activity five has to be started after the completion of activity four two days after completion of activity four. So, after two days starting of activity four, then activity five will start. So, that is the meaning of four start start plus two days. So, setting electrical wires in place cannot begin until two days after the frame has begun.

So, that is why this start to start has come. The next one is finish to finish. You see this is an example finish to finish. So, activity seven, this seven must be complete at least one day before the activity eight completed you see this. Now, we are referring only in terms of finishing of these two activity.

Precedence Diagramming Restrictions

Finish to finish

- Activity 7 must be complete at least 1 day before Activity 8 is completed.
- If Activity 7 is priming the walls of a house, Activity 8 might be the activities involved in selecting, purchasing, and finally delivering the wallpaper.
- It is important not to hang the paper until the wall primer has dried for 24 hours.



So, activity seven has to be completed one day before the completion of activity eight. So, for example, if activity seven is the priming the wall of the house. So, activity eight might be activities involved in selecting, purchasing and finally, delivering the

wallpaper. So, it is important not to hang the paper until the wall primer has dried for 24 hours. So, that is the application of this finish to finish.

Precedence Diagramming Restrictions

Start to finish

- Activity 11 cannot be completed before 7 days since the start of Activity 10.
- If Activities 10 and 11 are the two major cruising activities in a prepaid week-long ocean cruise, the total time cannot be less than the promised week.
- The S-F relationship is rare because there are usually simpler ways to map the required relationship



The next one is start to finish. You see this, this side we are starting this side is finishing. So, activity 11 cannot be completed seven days since the start of activity 10. See this one activity 11 cannot be completed before seven days since the start of activity 10. So, if activities 10 and 11 are the two major cruising activities in a prepaid week long ocean cruise, the total time cannot be less than the promised week.

This is an example of where we can use start to finish. So, the start to finish relationship is rare, because there are usually simple ways to map the required relationship. These are the four residence constraint one is finish to start, start to start, finish to finish, then start to finish. Now, I will explain how to use Gantt chart in MS project software. When we open MS project, the Gantt chart view is typically the default view displayed.

Gantt Chart in MS Project

- When we open MSP, the Gantt chart view is typically the default view displayed (at any time you can display the Gantt chart view by clicking on the Gantt chart button on the far left of the Task ribbon).
- The Gantt chart view contains two windows.
- On the left is a window that contains a form that is used to enter WBS data into the program.
- The Gantt chart is displayed in the right window.



At any time you can display the Gantt chart view by clicking on the Gantt chart button on the far left of the task ribbon. The Gantt chart view contains two windows and the left is a window that contains a form that is used to enter work breakdown structure data into the program. So, the Gantt chart is displayed on the right side of the window. For example, this is the problem which I have taken, there are A, B, C, D, E, F activities, there are precedence diagram, there is a time. So, for this problem, I am going to construct the Gantt chart.

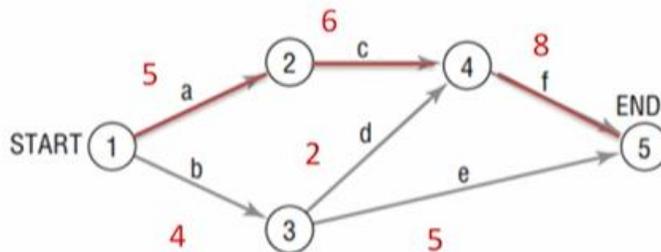
Demo 1 MSP

| Task | Precedence | Time (Days) |
|------|------------|-------------|
| a | - | 5 |
| b | - | 4 |
| c | a | 6 |
| d | b | 2 |
| e | b | 5 |
| f | c,d | 8 |

Activity-Precedence table

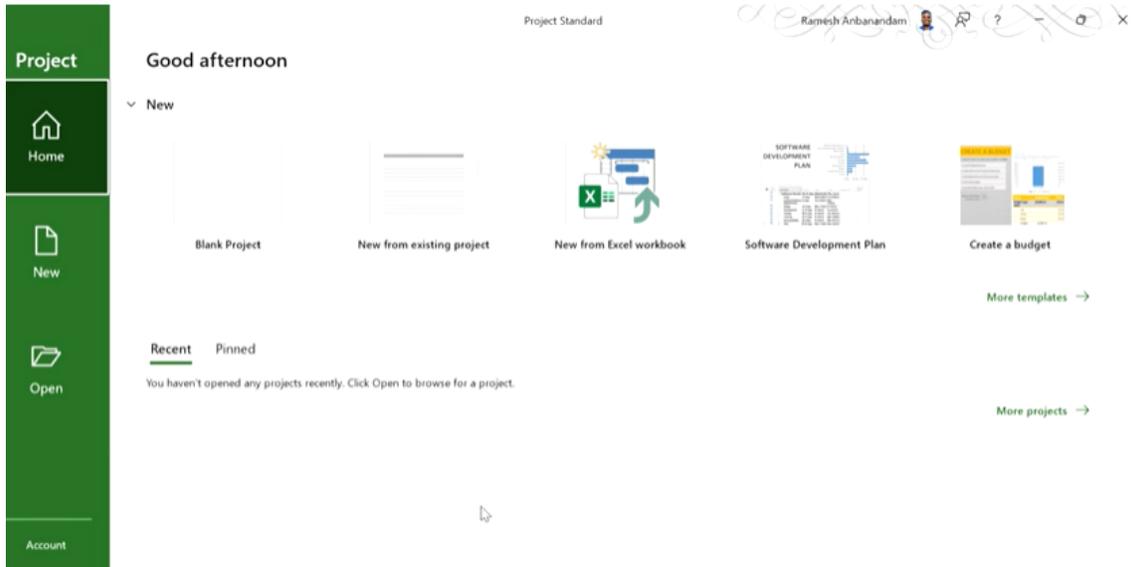


Demo 1 MSP

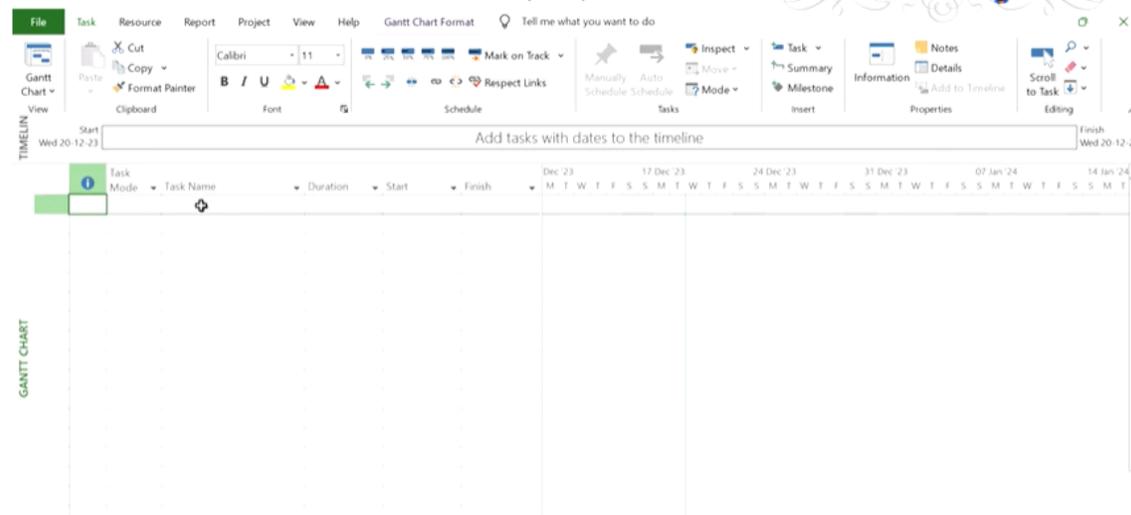


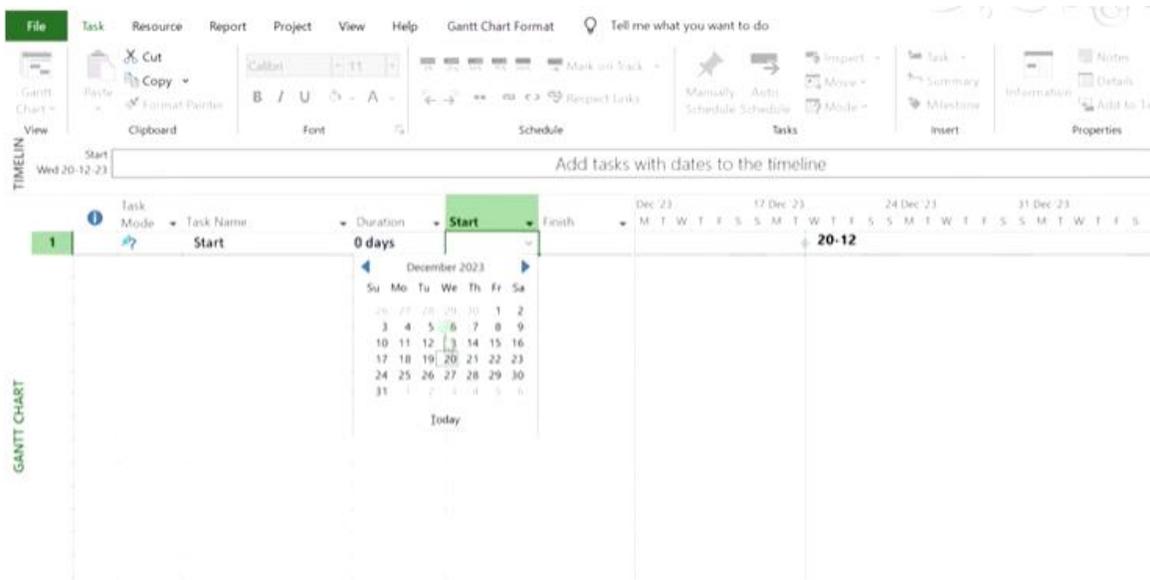
So, for that given problem, I have drawn the precedence diagram. So, what is the critical activity A, C, F, 11 plus 19 is the largest path that is the critical path. Now, I am going to give you a demo with the help of MS project, how to construct the Gantt chart for the

given problem. Dear students, now I have taken a sample problem by using that problem with the help of Microsoft project software, I am going to explain how to construct a Gantt chart. So, I have opened the MS project.



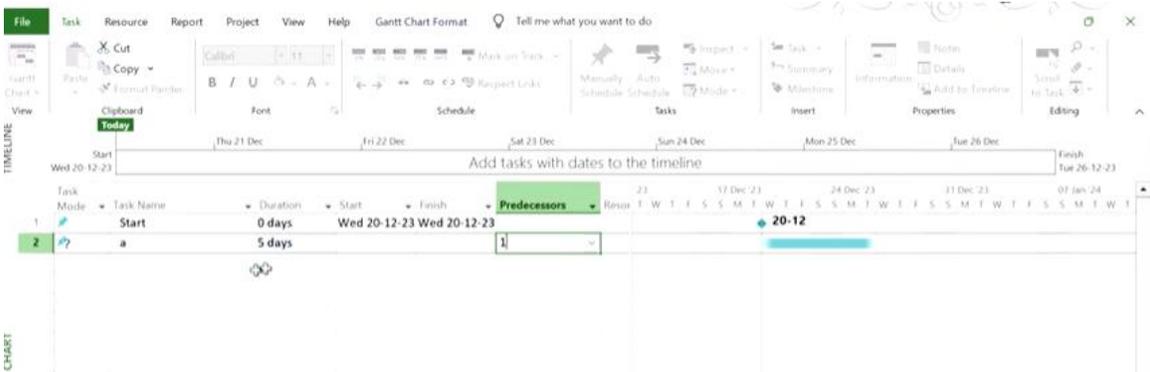
So, I go for blank project. So, as soon as you open, you see that there is a left side window is there and right side window. So, there is a different task mode is there, task name is there, duration is there, start time is there, finish time is there. So, first, I will start with start. This is a task name, the duration because I am going to draw activity on node. So, I am starting with start node.



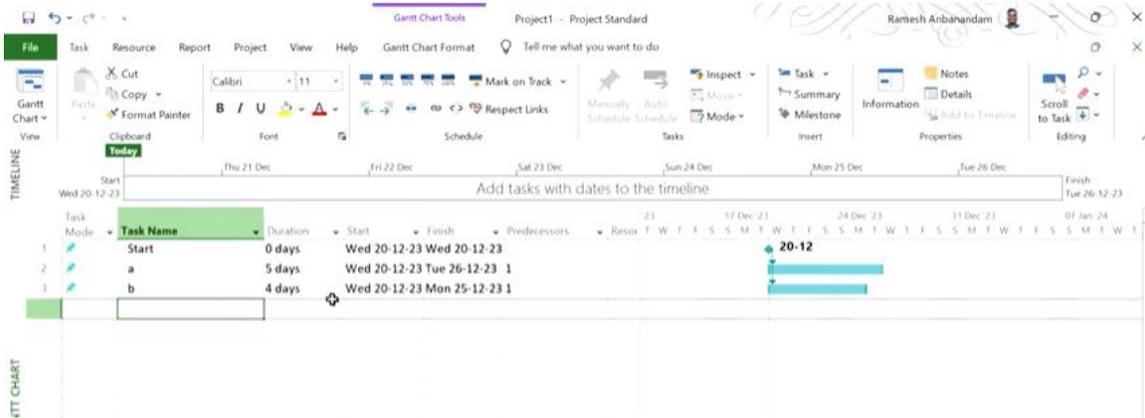


So, the duration is I have given only 0 day. Next, I have to specify the starting date. So, when I click this drop down menu, there is an option for the calendar. So, for example, today I am starting 0th day.

The second task name is A. What is the duration? The duration is 5 days. Now, see when you drag it right hand side, there is an option called precedence. So, when you type the precedence is the start. So, when you enter 1, so automatically it shows the starting and finishing date. So, next activity is the B, task name is B.



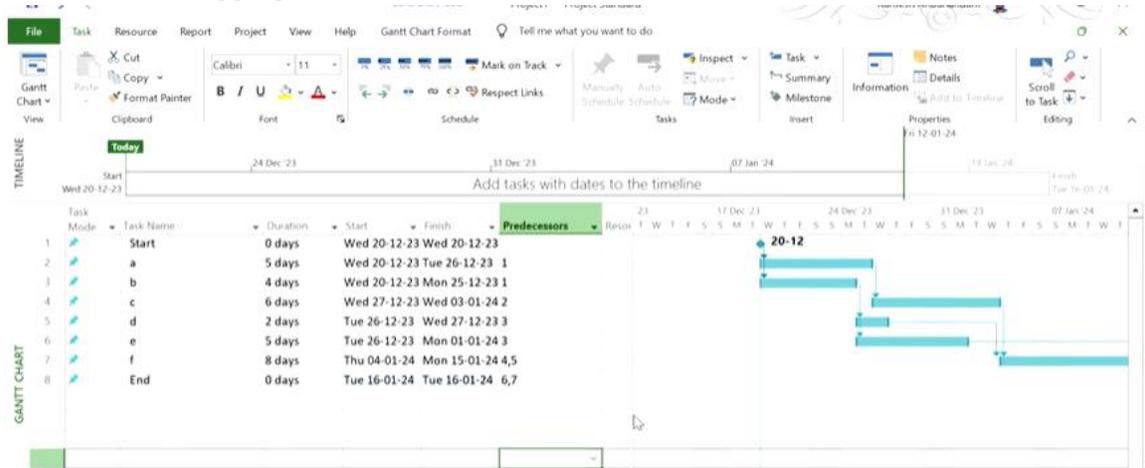
So, what is the duration? It is 4 days. Then you need not bother about start and finish. Now, to specify what is the predecessors. The predecessors again start. So, when you enter it, if you click anywhere, it automatically picks the starting time and finishing time.



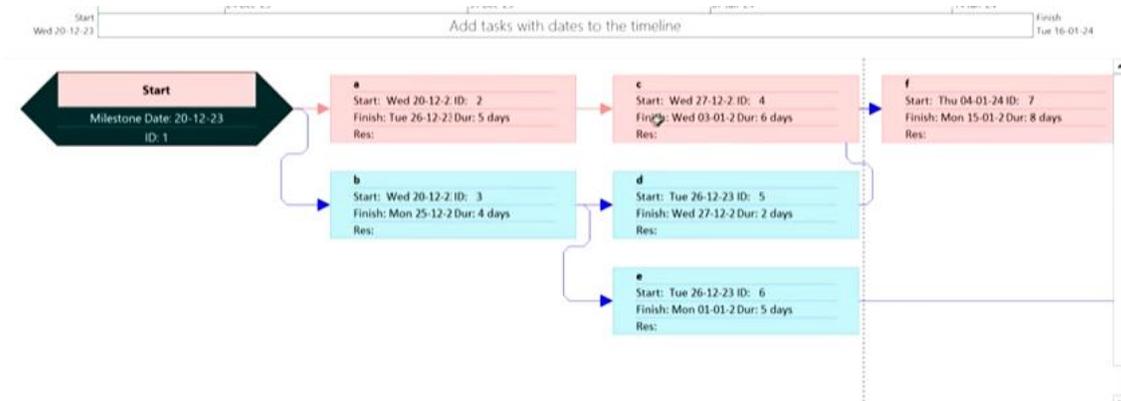
And the third activity is C, the duration is 6 days, I am entering 6, then I am going to write what is preceding activity. So, preceding is activity A, so but I have to specify the number. So, I am writing 2. So, click anywhere, it is chosen this one. So, as soon as you enter, you see on the right hand side, the gown chart is appearing.

I will come to explain this gown chart later. First, I will just I am entering the data. The next activity is D, then duration of that activity is 2 days, then the precedence is 3. It picks automatically. Then the next activity is E, the duration is 5 days, then the precedence is 3.

The next activity is F, the duration is 8 days and the precedence is 4, 5. Now, finally, I am going to write the end. The end the duration is 0 day. But the precedence is 6 that is E and F, so 6 and 7. So, now, I have completed and the right hand side, I am dragging it and dragging on the left hand side.



Now, you can see the right hand side. So, it will start today for example, December 20, it will be completed on first 16th January. And if you want to see the other type of chart, you go to this gown chart, you develop a network diagram. So, this network diagram shows the red color, the orange color shows the critical activity. This is the critical activity.



You can see that the whole critical activity. So, you can there are other view also you can see that we can show the resource sheet others, other than that we can do it separately. But at present either we can go for gown chart, you see the easily we can see what is the starting time of activity A, then what is the starting time of activity B and C. See here we follow finish to start, in the sense after finishing activity A, then we are going to start activity C. So, after finishing activity B, we are going to start the next activity. So, the the precedence constraint which you are using here is finish to start.

So, the MS project is easy way to construct the gown chart. Now, I have taken another little complicated problem where we are going to consider three time estimate. So, optimistic duration, most likely duration, pessimistic duration. For this problem also, I am going to give an another demo with the help of MS project. Dear students, in the previous demo, the time duration of activity is only one time is given.

Microsoft Project- Demo 2

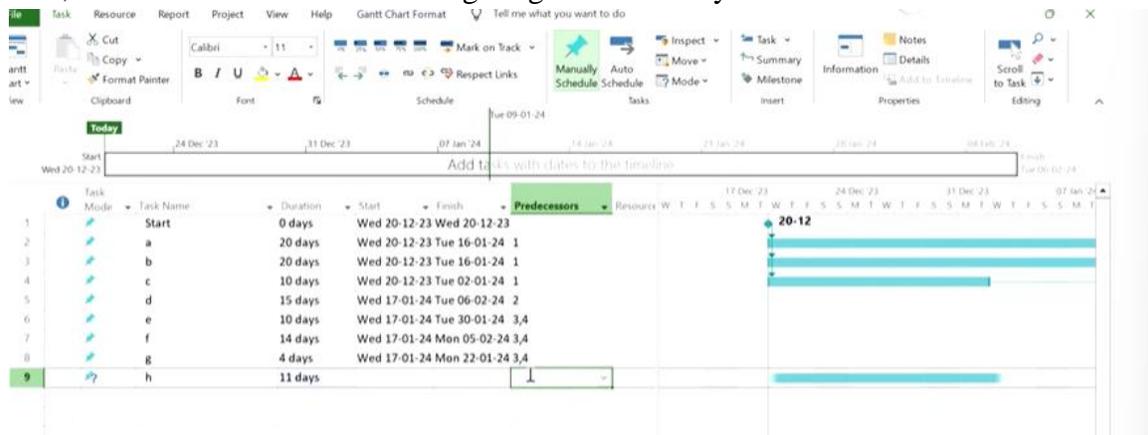
Project Activity times and Precedence

| Activity | Optimistic Duration (a) | Most Likely Duration (m) | Pessimistic Duration (b) | Immediate Predecessor Activities |
|----------|-------------------------|--------------------------|--------------------------|----------------------------------|
| a | 10 | 22 | 22 | - |
| b | 20 | 20 | 20 | - |
| c | 4 | 10 | 16 | - |
| d | 2 | 14 | 32 | a |
| e | 8 | 8 | 20 | b,c |
| f | 8 | 14 | 20 | b,c |
| g | 4 | 4 | 4 | b,c |
| h | 2 | 12 | 16 | c |
| i | 6 | 16 | 38 | g,h |
| j | 2 | 8 | 14 | d,e |



But there may be a situation, there will be a three time estimate may be given for doing each activity, like maybe optimistic time, pessimistic time and most likely time. So, what

do you have to do? We know that this optimistic, pessimistic and most likely time follow beta distribution by using the formula of mean of a beta distribution, that is optimistic time plus four times most likely time plus pessimistic time upon six, you have to construct, you have to convert into single time estimate. After converting it to single time estimate, then you have to go for constructing this Gantt chart. So, I have converted into single time estimate. Now, I am going to start with the start, I have to type activity name start, the duration is 0 days because it is only for indication, the starting date, I am giving today is date.



The next activity is A, the duration is 20 days and you drag on the eastern side. So, enter precedence, the predecessors as 1, then it chooses start time, finish time, then go to activity B, so the duration is again 20 days, then type the predecessors again 1, then activity C, 10 days, the predecessor is 1, then activity D, duration is 15 days, the predecessor is 2, then activity E, the duration is 10 days, the predecessor is 3 and 4, so 3, 4. 3, 4 is so B and C, I am representing that the first column number to represent the each task, instead of saying B and C, I am typing 3, 4, then F, duration is 14 days, predecessor is 3, 4, then G, duration is 4 days, predecessor is 3, 4, then H, duration is 11 days, the predecessor is 2, 4, then I, the predecessor is sorry, duration is 18, predecessor is 8, 9 that is G and H, then J, duration is 8 and predecessor is 5, 6, then finish, duration is 0, the predecessor is 10, 11, 7, now I have completed. On the right hand side, you can see the GANTT chart, so it is starting on December 20 and it will be finished on February 27. Now, we will discuss about scheduling for agile project, so why Scrum for scheduling? So, Scrum is a popular framework for project management and product development and it is used for scheduling due to several key characteristics that make it effective in managing complex task and projects. Here are some reasons why Scrum is commonly used for scheduling, one is iterative and incremental.

Why Scrum for Scheduling

- Scrum is a popular framework for project management and product development, and it is used for scheduling due to several key characteristics that make it effective in managing complex tasks and projects.



Why Scrum for Scheduling

Flexibility and Adaptability:

- Scrum is designed to be flexible and adaptive to change.
- The product backlog can be reprioritized, and the team can adjust its plan at the beginning of each sprint during the sprint planning meeting.
- This adaptability is crucial in dynamic environments where requirements may evolve or unexpected challenges arise.



Source: Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

Scrum promotes an iterative and incremental approach to development, work is organized into time boxed iterations called sprints, usually 1 to 4 weeks long, this allows for frequent inspection and adaptation ensuring that the project stays on track and that any necessary adjustment can be made quickly. The second reason is flexibility and adaptability, Scrum is designed to be flexible and adaptive to change, the product backlog can be re-pre-authorized and the team can adjust its plan at the beginning of each sprint during the sprint planning meeting. The adaptability is crucial in dynamic environments where the requirements may evolve or unexpected challenges arise. The next reason is customer feedback, so regular feedback from stakeholders is integrated into the process through sprint reviews, at the end of each sprint the team demonstrate the work completed and the stakeholder provides the feedback. This feedback loop ensures that the product align with the customer expectations and can be adjusted based on changing requirement.

Why Scrum for Scheduling

Customer Feedback:

- Regular feedback from stakeholders is integrated into the process through sprint reviews.
- At the end of each sprint, the team demonstrates the work completed, and stakeholders provide feedback.
- This feedback loop ensures that the product aligns with customer expectations and can be adjusted based on changing requirements.



Why Scrum for Scheduling

Transparency:

- Scrum emphasizes transparency in all aspects of the development process. The product backlog, sprint backlog, and progress are visible to all team members, stakeholders, and often even customers.
- Transparency helps in identifying potential issues early, allowing the team to address them promptly.



Source: Meredith, J. R., Shafer, S. M., & Mantel Jr., S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

The next reason is transparency, Scrum emphasize transparency in all aspect of development process, the product backlog, sprint backlog and the progress are visible to all team members, stakeholders and often even customers. So, transparency helps in identifying potential issues early allowing the team to address them promptly. The next concept is time boxing, so time boxing that is the practice of fixing the duration of certain events such as sprints helps create a predictable and sustainable pace for the team. It provides a sense of urgency and ensures that the team deliver a potentially shippable product increment at the end of each sprint. The next advantage is collaboration, Scrum encourages close collaboration between team members and stakeholders, daily stand-up meetings, sprint planning, sprint reviews and retrospectives facilitate communication and alignment among the team members.

Why Scrum for Scheduling

Time-Boxing:

- Time-boxing, the practice of fixing the duration of certain events, such as sprints, helps create a predictable and sustainable pace for the team.
- It provides a sense of urgency and ensures that the team delivers a potentially shippable product increment at the end of each sprint.



Why Scrum for Scheduling

Collaboration:

- Scrum encourages close collaboration between team members and stakeholders.
- Daily standup meetings, sprint planning, sprint reviews, and retrospectives facilitate communication and alignment among team members.
- Collaboration helps in identifying and resolving issues quickly, contributing to efficient scheduling.



Collaboration helps in identifying and resolving issues quickly, contributing to efficient scheduling. The next benefit is focus on value delivery, Scrum places a strong emphasis on delivering value to the customer. The product backlog is prioritized based on value and the team focus on delivering the most valuable features first. The value centric approach ensures that the product meet customer needs and provides a return on investment. Now, I am going to explain one technique called estimation poker for scheduling a agile project.

Why Scrum for Scheduling

Focus on Value Delivery

- Scrum places a strong emphasis on delivering value to the customer.
- The product backlog is prioritized based on value, and the team focuses on delivering the most valuable features first.
- This value-centric approach ensures that the product meets customer needs and provides a return on investment.



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Estimation poker- Scrum scheduling technique

- Estimation poker, a technique used to gauge effort for user stories, involves the development team.
- The Scrum Master facilitates this game to reach a consensus among developers.
- A deck of cards based on the Fibonacci sequence (0, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, etc.) is used.
- Team members select cards privately to estimate effort, aiming for a collective agreement on the complexity of tasks.



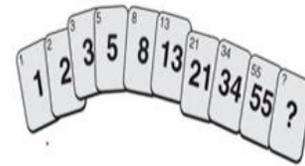
Example estimation poker cards each developer would hold.



Estimation poker, a technique used to gauge effort for user stories involves the development team. The Scrum master facilitate this game to reach consensus among the developers. So, here what is going to happen, each developers they are going to provide how much effort is required to complete the task. So, if there is any difference they are going to arrive at the consensus, so that after arriving at consensus we can say how much time can be allotted to complete the task. A deck of cards based on the Fibonacci series, for example, you know what is the Fibonacci series, the previous number is added 0, 1, 2, 1 and 2, 3, 3 and 5, 8 and so on.

Estimation poker- Scrum scheduling technique

- In estimation poker, each team member uses cards featuring Fibonacci sequence numbers to rate items in the product backlog.
- For instance, an 8-rated requirement demands more effort than those rated 1, 2, 3, or 5.



Example estimation poker cards each developer would hold.



So, team members select cards privately to estimate effort aiming for a collective agreement on the complexity of the task. In estimation poker, each team member uses cards featuring Fibonacci sequence numbers to rate items in the product backlog. For instance, an 8 rated requirement demands more effort than rated 1, 2, 3, 5 because the number is bigger one. So, an 8 rated item should be slightly less than twice of the effort of a 5 rated 1 and approximately equal to the combined effect of items rated 3 and 5. So, the relative assessment aids in understanding and comparing efforts levels among different backlog items.

Estimation poker- Scrum scheduling technique

- The development team begins by choosing a mutual requirement rated as 5 as a benchmark from the backlog.
- Then, the product owner presents backlog requirements sequentially.



Example estimation poker cards each developer would hold.

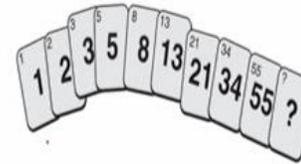


So, the development team begins by choosing a mutual requirement rated as 5 as the benchmark for the backlog. Then the product owner presents backlog requirements sequentially. Then again, the developers will take the poker cards and they will show what is the amount of effort is required. This way will keep on continue for completing the whole product. So, each team members select a card indicating their estimated effort

and placing it face down.

Estimation poker- Scrum scheduling technique

- Each team member selects a card indicating their estimated effort, placing it face down.
- Once revealed simultaneously, if there's no consensus, discussions start, focusing first on the highest and lowest estimations.



Example estimation poker cards each developer would hold.



Once revealed simultaneously, if there is no consensus discussion starts focusing first on the highest and lowest estimations. Further, voting round occurs until an agreement is reached within 4 rounds. If no consensus emerges, the Scrum Master helps identify a mutually acceptable score. Typically, using estimation poker, the team can estimate the entire backlog of a backlog in a few hours facilitating efficient estimation.

Estimation poker- Scrum scheduling technique

- Further voting rounds occur until an agreement is reached within four rounds.
- If no consensus emerges, the **Scrum Master** helps identify a mutually acceptable score.
- Typically, using estimation poker, the team can estimate the entire backlog in a few hours, facilitating efficient estimation.



Example estimation poker cards each developer would hold.



Scheduling with Scrum

Here's how you can approach scheduling within Scrum:

Time-Boxed Sprints:

- The basic unit of time in Scrum is the sprint, typically ranging from 1 to 4 weeks.
- The team commits to delivering a potentially shippable product increment at the end of each sprint.



Source: Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

Now, further we will discuss about scheduling with Scrum. Here, how you can approach scheduling with Scrum. One is a time boxed sprints. Other features of this scheduling with Scrum is it is a time boxed sprints. So, the basic unit of time in Scrum is the sprint, typically ranging from 1 to 4 weeks. The team commits to delivery a potentially shippable product increment at the end of each sprint.

Scheduling with Scrum

Product Backlog:

- The product backlog is a prioritized list of all features, enhancements, bug fixes, and other work that needs to be done.
- The team, along with the product owner, reviews and prioritizes the backlog regularly.



Source: Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

The some term is product backlog. The product backlog is a prioritized list of all features, enhancement, bug fixes and other work that needs to be done. The team along with the product owner reviews and prioritize the backlog regularly. Then sprint planning. Before each sprint, there is a sprint planning meeting. The team select items from the product backlog based on priority and its capacity for the upcoming sprint.

Scheduling with Scrum

Sprint Planning:

- Before each sprint, there is a sprint planning meeting.
- The team selects items from the product backlog based on priority and its capacity for the upcoming sprint.



source: Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

Scheduling with Scrum

Daily Standups:

- Daily standup meetings (daily scrum) help the team stay aligned and discuss progress.
- Team members share what they did yesterday, what they plan to do today, and any blockers.



Then daily stand ups. Daily stand up meetings help the team stay aligned and discuss progress. So, team members share what they did yesterday, what they plan to do today and any blockers. Then sprint review. At the end of each sprint, there is a sprint review where the team demonstrate what was accomplished. So, stakeholders provide feedback and the product backlog is adjusted based on the review.

Scheduling with Scrum

Sprint Review:

- At the end of each sprint, there is a sprint review where the team demonstrates what was accomplished.
- Stakeholders provide feedback, and the product backlog is adjusted based on the review.



Scheduling with Scrum

Sprint Retrospective:

- After the review, there is a sprint retrospective to reflect on the sprint and identify areas for improvement.
- This continuous feedback loop helps the team adapt and improve its processes.



Then sprint retrospective. After the review, there is a sprint retrospective to reflect on the sprint and identify areas of improvement. This continuous feedback loop helps the team adapt and improve its processes. In this lecture, I have discussed about the Gantt chart and explained what are the benefits and weaknesses. Then I have explained how to construct a Gantt chart. Then I have given a demo for a two sample problems with the help of MS project.

Then I have explained what are the important points in scheduling with Scrum. Then what are the various features of scheduling with Scrum. Then very importantly, I have explained one technique for Scrum scheduling. That technique is called poker estimation. Thank you. Thank you.