Interview Questions

PLANNING

ENGINEER

THIS E-BOOK IS BASED ON MY PERSONAL EXPERIENCES

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To all the

Planners

Making Difference out there!

Interview Questions for a Planning Engineer

"Hey Yamin, when you wanted to leave," my Contracts Manager asked me at the closure stage of my previous project. "One month!" I replied.

Now, I have to find a new job. I updated my CV & submitted it to different portals online.

Got calls and interviews were started Face to face, telephonic, Skype, and even on IMO

I may have attended a minimum of fifteen interviews and was selected in a few, and got some rejections on the spot. Soon after releasing from the previous job, I joined the right one offered. Some joining letters/emails I received later.

Anyways, it was the time most of the professionals have gone through.

Here, I have compiled most of the question were asked to me. Of course, I will not list the irrelevant, irritating ones that some HR still ask for no reason.

These questions are mainly for a Construction planner and Primavera P6 & MS user. Answers are my best knowledge, and your opinion may differ, although I took help from different resources later on while writing this article.

Interview Questions for a <u>Planning Engineer</u> contain versatility of information regarding all the <u>project management</u> fields.

The planning engineer is one of the most critical people in any project. All the project related information is on his/her fingertips all the time, and you call it the right hand of any project manager alongside a <u>project engineer</u>.

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Let's see what kind of questions a planning engineer has to face in an interview.

Question-1: What is a Base Project Schedule?

Answer: A <u>baseline</u> is an approved program by both parties, used as a benchmark to measure a project's progress.

Question-2: What is the Main Driver of a Project, and how will you get it?

Answer: The main driver consists of significant activities driving the project on the <u>critical path</u>. To get it, just go to the last activity, check its driving activity, go to that driving activity, and mark its driving also; the same goes until you reach the first activity. This is typically done through scheduling software like <u>Primavera P6</u>, Microsoft Project, etc.

Question-3: How many baselines are allowed in any project, and which baseline decides the project's success or failure?

Answer: A project must have a minimum of one project baseline & that number can go to unlimited. But if you find several baselines, that means the planning team is quite inefficient – Avoid it! The latest baseline defines the success or failure of any project.

Question-4: What are the Key Performance Indicators – KPI's?

Answer: A KPI is a type of performance measurement on a particular activity where engaged. KPI's are defined by keeping a factor "What matters the most." A careful study and analysis are required to define because it differs from organization to organization like a critical KPI. You may not be of any interest to other same type organizations. It is a diverse area. Examples Rubber lining, Concrete Work, Machine Failures in a Specific Duration, Plantation, Number of hiring/firings, Training, etc. etc.

Question-5: What you normally need to develop a plan?

Answer: I need the Contract documents to understand the scope, the schedule drawings to know about areas, Bill of Quantity-BOQ including cost, scheduling software access. Yes, I need to meet my project team to know about a little productivity rate if I don't know any specific activity.

Question-6: How do you define a critical path?

Answer: The longest path & the minimum time required to complete a project. A combination of activities with the total float as zero are included all.

You can read more here, Critical Path in Project Planning.

Question-7: How much duration a milestone activity has typically?

Answer: Well, different types of milestones are there like start milestone, finish milestone, etc. but all have ZERO duration.

Question-8: What is the difference between Free Float & Total Float?

Answer: **Free Float** – the amount of time we can delay an activity without affecting the early start date of its successor activity. **Total Float** – the amount of time we can delay an activity from its early start date without delaying the whole project finish.

The free float may affect the start of any activity, but total float may affect the overall project's duration.

Question-9: What is the difference between Change order & Variation order Request?

Answer: Technically, there is no such difference. A change order or Variation request is a change in scope from the contract but as per contract. If you are much curious about which term should be used, the better refer to your contract documents. I have heard the

term Variation Order but have never seen any documentation for it. Everywhere they write a <u>Change Order Request</u>.

Question-10: How to measure the progress of a project?

Answer: Normally, there are three ways to measure the progress 1)-Man-hours, 2)-Cost & 3)-Quantity

My preferred method is through Man-hours. It is more logical, but I have to comply with contractual obligations as many clients also prefer through Cost.

We use the quantity we need to track material availability like rubber lining of steel tanks, coatings project, etc.

Sometimes, we have to use all three methods on a single project to get a more intensive project updated status.

Question-11: Have you heard about the Kick of Meeting?

Answer: Yes, I have handled a number Kick of Meetings on different projects & companies. The **kick-off meeting** is usually the first meeting of all major stakeholders, including the Project Manager with his team and Owner's representatives. Here, we discuss high-level overall plans, things like how we will execute, and once things get clearer as the project goes forward, we do rolling wave planning.

These meetings can be conducted at the new phase that starts during the execution of the project also.

You can read more about the <u>Project Kick-Off Meeting</u>.

Question-12: What certification & qualification you have?

Answer: I am a Project Management Professional- <u>PMP</u> certified from Project Management Institute – PMI. I am a Graduate Engineer & pursuing a Master's in Project Management.

Question-13: Do you know about CPI?

Answer: Yes, it's a Cost Performance Indicator, and it evaluates the performance in the sense if the project is under-budget, over-budgeted, or on track. The formula is for CPI is the ratio of earned value – EV over actual costs – AC that is CPI =EV/AC.

You can read more here, <u>Earned Value Management</u>.

Question-14: What do you know about SPI?

Answer: It is the Schedule Performance Indicator and indicates the project work's performance is completed to the baseline schedule. It is calculated by dividing the earned value by the planned value that is SPI = EV/PV

Question-15: What you know about <u>Triple Constraints</u>?

Answer: Cost, Time, and Scope with quality as the fundamental theme.

Question-16: What are undesirable in any plan?

Answer: Constraints, SF (Start to Finish) relationship, Long lags or leads, Negative Float, etc.

Question-17: How to avoid Negative Float in a Baseline Schedule?

Answer: Negative float indicates that the activity is already delayed. Normally, a constraint is the culprit of it. Remove all the constraints or use proper logic -relationships to deal with it. Also, check dangling or out of sequence activities.

During updating a schedule, a negative float for some activities is very common. You cannot avoid it unless it is going as planned.

Question-18: If you are reported 5 SPI, what it means? – Real Question was Asked to me!

Answer: The planner has made a blunder during calculations.

Question-19: What is an <u>S Curve</u>?

Answer: Graphical representation of 'anything' like Manhours, Cost, etc., plotted against time.

Question-20: What do you know about the Reflection Schedule?

Answer: The reflection function is always underestimated, but it is a great feature in <u>Primavera P6 Professional</u>. A Reflection program is just a copy of the program to look at different scenarios after making desirable changes. Once satisfied, just merge into the native program.

Question-21: What is ACWP, BCWP & BCWS?

Answer: These are old acronyms but still efficient to use. These are the old names of PV, EV, AC, respectively.

- **BCWS** is Budgeted Cost of Work Scheduled
- **BCWP** is the Budgeted Cost of Work Performed
- **ACWP** is Actual Cost of Work Performed

For more details, you can visit <u>Earned Value Management</u>.

Question-22: How will you make a comparison of different updates for the same schedule?

Answer: I will use the Claim Digger function that is available in Primavera P6.

Question-23: What is IPC?

Answer: It is an Intermediary Payment Certificate that we claim during the project life cycle for the client or sponsor's work. Let say our project value is 10 Million dollars, and the duration is 6 months. This time, we will take some advance payment like 10%, and the rest of the 9 million we will claim every month of what we will perform.

Question-24: Do you know any about Retained & Over-Ride Logic in Scheduling?

Answer: This only matters if the schedule is not going as planned, which means a difference in activities progress. The Progress Over-ride will not respect the logic anymore if there is any variance and hence will shorten the critical path but with mostly illogical out of sequence activities. In other sense, the activities will do as it is an open-end activity. The Retained logic is completely otherwise.

Question-25: What do you know about DCMA Scoring?

Answer: DCMA is 14-Point Assessment Metrics to evaluate any baseline schedule. It includes; 1. Logic 2. Leads 3. Lags 4. Relationship Types 5. Hard Constraints 6. High Float 7. Negative Float 8. High Duration 9. Invalid Dates 10. Resources 11. Missed Tasks 12. Critical Path Test 13. Critical Path Length Index (CPLI) 14. Baseline Execution Index (BEI)

Question-26: What do you about Delay Analysis Techniques?

Answer: Normally, it is defined in the Contract documents that how we are going to calculate extension of time, but if not, then there must be a consensus for using any available technique from both of the parties like 1) Impacted as planned 2) Windows Analysis 3) Time Impact or 4) As-Built But-For.

Question-27: What is the difference between Float & Slack?

Answer: Nothing, just synonyms.

Question-28: What is the difference between Planner & a Scheduler?

Answer: Both are quite different but linked to each other tightly. Somewhere these are just synonyms to each other.

The planner or Planning Engineer reads the IFC drawings, defines the activities, duration & resources according to site construction conditions. He knows better all the work phases even during the tender stage and at the construction stage. It should be from an engineering background necessarily.

On the other hand, Scheduler takes-over the work done already by the planner to make a more detailed one. This job does not require to have an engineering background.

I read somewhere on LinkedIn (by Mustafa Ozgoren) that.

- Planning is What & How?
- Scheduling is When & Who?

Both should be well versed in Planning software in any case.

Question-29: What is a different % complete type in Primavera P6?

Answer: Physical, Units & Duration.

Question-30: What is the different duration type in Primavera P6?

Answer: Fixed Units, Fixed Units/time, Fixed Duration & Units, Fixed Duration & Units/Time.

Question-31: What is Productivity?

Answer: Productivity is the efficiency of any working entity. It is measured as the amount of output for work per hour. Productivity rates define how efficient a team you have. Formula is **Productivity = Output / Input**

Example: Let say you have two masons (call A&B), and let's review their work for last week; they worked for 50 hours and B for 30 hours. A fixed 5000 blocks & B did 3500 blocks. As a planner, you may like A as it is putting more on but let's check on productivity for both.

Mason A= 5000/50hrs = 100/hour

Mason B= 3500/30hrs =116/hour

Here, B is much more productive than A, and hence you need to raise the skill level of A-type Mason by proper training, etc.

Question-32: What are the different levels of a Schedule?

Answer: There is a different school of thought to define a program one says its six levels, others say it's five, and even one thinks only four levels of a program are there when scheduling.

Here, I will explain the six levels as most of the old school people still think as more logical, there are

LEVEL-1: Overview Schedule

LEVEL-2: Area Wise Schedule

LEVEL-3: Discipline Wise Schedule

LEVEL-4: Major Activities Schedule

LEVEL-5: Detailed Activities Schedule

LEVEL-6: Micro-detail Activities Schedule

Question-33: What is the difference between Project Planner & Project Controller?

Answer: The project planner does the planning phase for the project from <u>WBS</u> identification, identification of project deliverables, milestones, create the baseline, plan the budget, cash flow, and KPI's and trackers. The planner is to prepare the program and prepare an acceptable budget for all parties.

Project control assists and ensures that the plan is controlled by providing a risk register, analyzing critical path, placing mitigation plans, track project KPI, and ensures that the project is running on time and budget. Its focus is only on productivity & reports according to organizational norms.

Question-34: What you normally present in a Weekly Report?

Answer: It depends on the demands of stakeholders on a particular project. Normally, I update the Schedule with a proper backup, do required baseline comparisons, Critical Path that displays activities are important to consider on, three weeks lookahead – 3WLHS, EVM reports are also included in my report. I draw S curves for Man-hours, Cost, Manpower Histogram, Equipment Histogram. Furthermore, I always update the Procurement Schedule separately in MS Excel to track other materials. Long lead items are already being tracked and updated accordingly in my baseline schedule.

Question-35: What are the different types of Primavera P6 activities?

Answer: These include

- **Task-Dependent:** In this type, assigned resources are scheduled based on the activity's calendar itself.
- **Resource Dependent:** In this type, the assigned resources are scheduled based on assigned calendars.
- **Level of Effort:** This type of activity goes with dependent activities like administrative issues.
- **Start Milestone:** This is designated for the start of a major phase or stage of a project. A milestone that has zero duration. It is just like a flag.
- **Finish Milestone:** This is designated for the finish of the major phase or stage of a project. A milestone that has zero duration. It is just like a flag.

Question-35: Differentiate between budgeted Cost and Budgeted Units?

Answer: Budgeted Cost for an activity is the total budgeted costs of all resources on that particular activity, whereas Budgeted units are budgeted units of work for the resource assignment on any specific activity.

Question-36: When the Planning Phase /Stage is started for a Project?

Answer: Well, they say the planning phase should be started before ending the initiation phase, but as per my thinking, Planning should be started as soon as the <u>project life cycle</u> starts.

Question-37: What is the difference between different Primavera Scheduling Programmes?

Answer: There are few other programs, but we will discuss below three as these are mainly used for scheduling

1. Primavera P6 Professional
2. Primavera P6 EPPM (Web Client)
3. Primavera Contractor

Now, Primavera Contractor is the least costly and hence does not have many features like Enterprise and Admin menus are not available. It is limited to 2000 activities only. No Microsoft Project XML file support, No Resource Roles, No Enterprise Project Structure (EPS), and installed only as standalone. Still, it is a great and powerful application. The interface is as of Primavera P6 Professional. A person that uses Primavera P6 Professional can handle it with ease.

Now let's compare the other two major giants Primavera P6 Professional & Primavera P6 EPPM

EPPM has some edge over Professional as it has more visual aids, can handle more projects at once, installation is faster, need to be installed at only one machine. In contrast, professionals should be installed on each machine. Professional is a small-scale as compare to EPPM as it only can handle 100,000 activities. EPPM has more graphs, dashboards, and pivot tables to help the management review the status quickly. In contrast, you need to use third-party software like MS Excel to get better visualization when using P6 Professional.

Professional has more speed than EPPM; it needs no internet connection to be operated, whereas EPPM needs a good internet connection.

Question-38: What are you usually see on a Change Order Form?

Answer: There are five major & must mentions on any Change Order (CO) Form;

1.**Change in the Scope** – Either additions or reductions. A change is just color can be referred into a change order even no monitory value involves. Better to document this for reference to give credit.
2.**Change in Cost** – Either plus, negative, or even zero.
3. **Change in time** – Never forget if you are on the contractor side & must plan as per resources or add optimum to avoid Liquidated Damages (L.D.). It should have a start & finish date even though not necessary as per the Change Order form.
4.**Signatures** – It should be signed by authorized parties two or more.
5.**Date of Change Order** – The signature date must be included in the Change Order Form.

Question-39: Difference between MS Project and Primavera P6?

Answer: I have used both of these, but in my opinion, Primavera P6 is way more powerful than MS Project. MS project only allows 11 baselines for any particular project, but Primavera P6 offers unlimited baselines. That shows that with Primavera P6, we can handle complex projects.

In Primavera, P6 multi-user can work simultaneously, but in MS Project, one must close so the other user can open that project.

Web Support is also available in Primavera P6 EPPM that means a user can operate through the internet without installing Primavera P6 software on a machine. That makes it a portable type of product.

MS Project is user-friendly as most people are familiar with Microsoft products like MS Excel buy Primavera P6 needs some basic skills/training to operate.

You can read more about these here <u>MS Project and Primavera P6</u>.

Question-40: How you track the Progress of a Project?

Answer: There are three ways to track the progress of a project

- Man-hours
- Cost
- Quantities

Every client has his/her preferences to use any of the above methods, but I use Man-hours. The reason is it gives me proper control of resources that make tracking quite easy and effective. One can get realistic manpower requirements for a particular project.

Many clients prefer cost, but if a Project Manager filters activities with higher cost and gets it done first, it will show some kind of fake overall progress. But it is good to have a proper cash flow forecast.

Quantiles are preferred where material management is required mainly, and it also helps to track KPIs of a construction site. But being a planner, I must say tracking is tough with this method as you need to track most of the materials.

Question-41: What is Reflection in Primavera P6?

Answer: It is one of the exclusive features in Primavera P6. Possible changes in a project are done via reflection. Reelection is just like a what-if scenario.

Once changes are reviewed and approved, then it can be merged into the sources project.

Different possible scenarios are reviewed, and the best one is merged after approval.

Scenarios Like: If your actual plan is lagging and the Project Manager asks if I provide you with some extra resources (shift), then how long will it take to catch-up?

Question-42: What is the use of Claim Digger in Primavera P6?

Answer: The handiest function to compare two schedules for any change.

The Clam Digger is one more exclusive kind of function in Primavera P6. Although it is a separate product nowadays, it is a built-in Primavera P6.

Claim Digger helps track any change between two projects in terms of Activity deleted, added, change in relationships, change is duration, change in cost, change in units, change is % age complete mainly.

Reports can be exported in HTML and CSV files or even Text.

Question-43: What you know about Rolling Wave Planning?

Answer: First is very high-level planning is done at the project level when you only have a concept because at that time, you don't have many resources or team members to coordinate, and so you make an expert judgment for estimations.

Then you do it on phase level. Phases are as per your organization's norms. You may have four phases or less/more.

Rolling wave planning is done at the deliverable level. It can be like a weekly lookahead base or even is done daily on foreman levels. It could be monthly as per stakeholder's requirements. See below for a pictorial view.
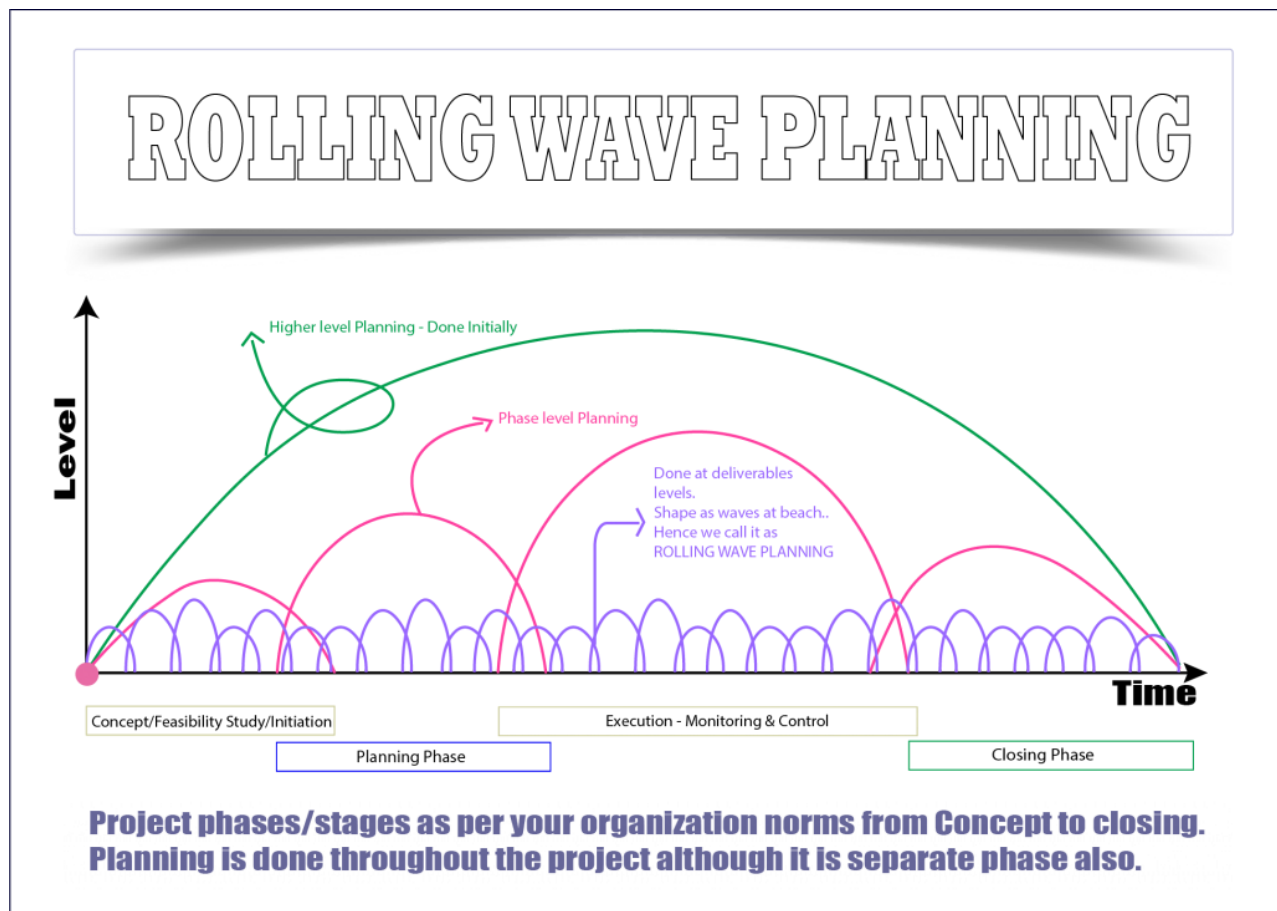
Question-44: Differentiate among WBS, Work Package, and Activity?

Answer: WBS: Work Breakdown Structure- WBS is simply a decomposition of all the works to complete any project. A WBS is arranged in a hierarchy having a clear and logical group. A WBS is deliverable-oriented.

Work Package: WP is the lowest level of any work breakdown structure from which we can manage the cost and duration estimation.

Activity: A discrete, planned portion of work to be performed in a project.

Still confusing? Let's understand by example.

Say that we are building a house, and flooring is one of the WBS (it depends on the team how they define WBS in a plan). Now, these different floors are different work packages. A team performs a series of activities like soil compaction, waterproofing, concrete blending, rebars, etc., to complete the floor.

To understand, activities will complete work packages, and that will ultimately complete the WBS. It's like a bottom-up scenario.

Question-45: What is the difference between Open-End activity and a Dangling Activity?

Answer: An activity without a predecessor or successor relationship is called Open-End activity.

A Dangling Activity may have both predecessor and successor but is still dangling from one end, leading to fake results for critical path and completion dates. It behaves the same as an open-end activity but is the more difficult and complex scenario to find it.

It is undesirable in any program and needs to fix always.

Question-46: Is there any difference between a flag and a milestone in Primavera P6?

Answer: A Milestone & A flag are event activities.

You cannot update Flags manually, and it will be updated automatically, whereas a milestone needs to be updated manually.

By the way, I have never used the flag as it is an obsolete type term in Primavera P6 nowadays.

You can read more about How to Review and Submit a Baseline Plan.

Question-47: What are the different major types of drawings you see on a Construction Project?

Answer: There are four types we normally came across 1. Tender Drawings 2. AFC/IFC, 3. Shop Drawings, and 4. As-built Drawings

Tender Drawings: The Clients release drawings included in the tender documents for pre-qualified Contractors. Some time these are also referred to as Design drawings.

Approved for Construction Drawing: AFC – Approved for Construction or IFC – Issued for Construction both terms are being used for drawings and documents approved by authorities after review. IFC/AFC is a stamped or marked document, or you can say one of the controlled documents. Even some people are using the term IFC as Information for Construction or Instructions for Construction. Another name is IFR – Issued for Information.

Client/Consultant/PMT issues these drawings to EPC, Contractors, Supplier, Vendors, Sub-Contractor, or Manufacture.

Shop Drawings: IFC is What to do & Shop Drawing is How to do? It is a drawing produced by the contractor, supplier, vendor, sub-contractor, or manufacture in a simplified way to be understandable to the hand executers at site or staff.

These are the most detailed drawings on any project. But before going for construction, approval is a must from the Clients. Any change major/minor should be addressed.

As-Built Drawings: It shows that how actually the final project has turned out. It contains all suggested modifications required later on site. These are mainly used for maintenance teams later on.

Question-48: Have do you apply for an Extension of Time or conduct a Delay Analysis?

Answer: First, I will gather delay events as per the contract. Like letters we have sent/received for potential delays before 14 or 28 days of the event to occur (as per contract), e-mails, minutes of meetings, or any legal document supporting is collected.

Second, I will use these events with facts and figures to perform delay analysis in Primavera P6 as per the terms and conditions mentioned in the contract. There are many Delay Analysis Techniques, namely, Impact as Planned, Time Impact Analysis, As Planned vs. As-Built, As-Built For, Windows Analysis, etc.

Once the second step is completed, I will evaluate overhead costs, Recheck Equipment Warranties, Material Shelf Life, etc. Finally, present it to the concerned.

I will compile a summary like the below for top management. All the backups will be attached to this presentation.

DELAY IMPACT AS PER PHASES
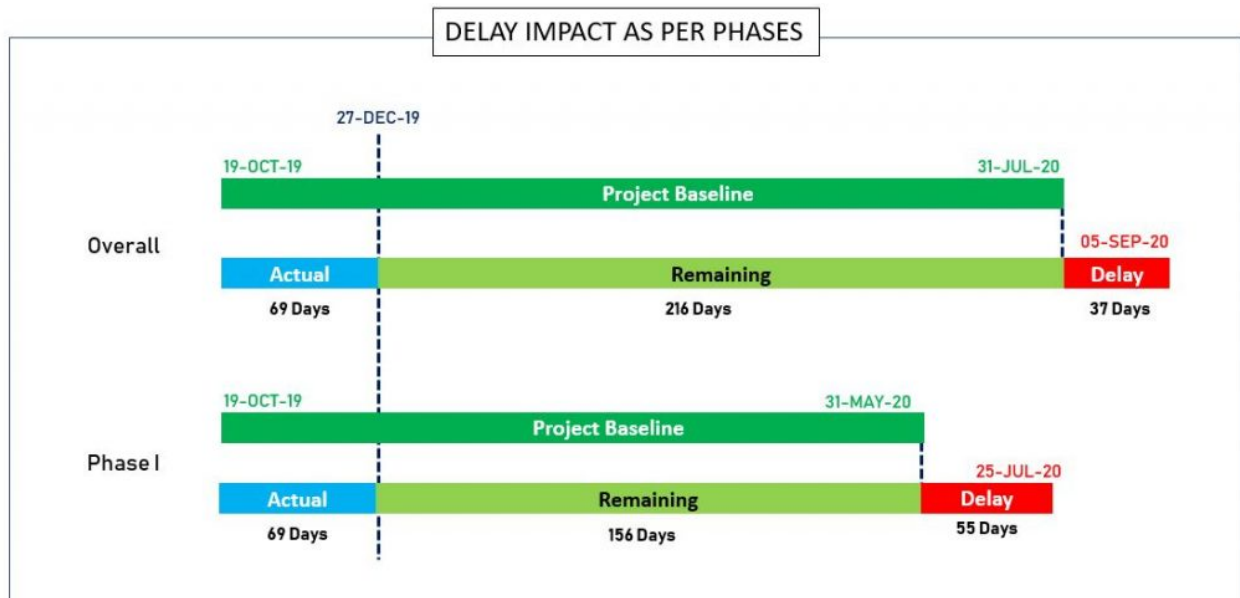
Question-49: What is the difference between Resource Leveling and Resource Smoothing?

Answer: Both Resource Leveling and Resource Smoothing are Resource Optimization Techniques. We use these techniques to get optimum results from our resources.

Every schedule is a resource constraint, and during the development, we may find peaks like in one month/week we need 250 men-counts, but in others, we only need around 150-200 men-counts. Hence, we will use resource optimization techniques to be averaged and get a possible smooth graph. The same is applicable to deal with other resources line Material, Equipment, etc.

Resource leveling is a "Parent" technique and may be followed by Resource smoothing; you may call it a "Child" technique.

During Resource Leveling, the Project's overall duration may be changed as it is Resource Constraint. Still, in Resource Smoothing, we use slack/float for distribution and no change in Project Duration.

Question-50: What you know about the Stakeholders on any Project?

Answer: The Project Stakeholder is any entity affected either positively or negatively by that project.

For example, if a refinery is installed at a Sea, then the Sea-life will be negatively affected, but the locals may get a huge rise in daily life quality. Both Sea-life and locals are included as stakeholders.

We normally classify it as primary & secondary stakeholders. Primary stakeholders are also called Key stakeholders—however, there are several classifications in textbooks.

On a construction project, we normally use the following terms for these key stakeholders.

Client – Normally, the Sponsor, who provides finance to run a project.

PMC – Project Management Consultant, is hired by the Client.

PMT – Project Management Team

EPC – A contractor responsible for carrying out Engineering, Procurement & Construction on a project

Contractor – Whoever wins a bid and awarded the contract. Usually a part of a big project.

Sub-Contractor – The contractor hires more resources to complete the project on-time.

Further, there are Suppliers, Vendors, Project Teams that you have to deal with on any construction Project.

Question-51: What do you know about Global Change in Primavera P6?

Answer: Global change is a function in Primavera P6 Professional used to do tedious tasks in minutes. Like you can increase, decrease, or remove the cost of all activities in one shot. You can do the same with durations. You can apply this on Activities, Resource Assignment, and Project Expenses for making changes globally. A convenient feature but should be used carefully.

Question-52: Why we call Primavera "P6"?

Answer: From 1983 to 2004, Primavera used the P3 suffix for all kinds of releases like P3 version 1.0, P3 version 3.0, etc., but this suffix changed to P6 to avoid confusion among P3, SureTrak, and the Primavera. Later on, P6 is kept as a suffix permanently.

You can read more about different versions of history here, <u>Primavera P6</u>.

Question-53: What is the job of a Planning Engineer?

Answer: On any project, daily tasks depend where he/she works, like onsite or off-site. But significant jobs of any planning engineers are to Prepare Execution Plans, Monitoring & Controlling, <u>coordinating</u>, Integrating the stakeholders on one page. Planning Engineer is a bridge between the client and contractors for smooth communication.

Question-54: How to become a Planning Engineer?

Answer: You must have a relevant degree in Engineering then you better start your career by analyzing site work so you can learn the sequence of actual work. After that, get some software training like Primavera P6, MS Project, Asta PowerProjects, Tilos, etc. Prepare plans, practice, and grab the opportunity as you find without considering salary or other perks at the start. Get some project management training like PMP, Prinace2, etc.

You can enter this field without an engineering degree, but employers always prefer to have a project planner with a relevant degree. Hence, you may not fit in most of the big organizations easily – Better avoid if you are not an engineer.

Question 55: How does p6 calculate total float?

Answer: It's the difference between the Late and Early Dates. Primavera P6 uses the below formula to calculate total float.

Total Float = Late Start – Early Start **or** you can say Total Float = Late Finish – Early Finish.

Question 56: What is a CPM schedule?

Answer: Critical Path Methodology – CPM, or you can name it as a Critical Path Method, is one of the most popular construction industry techniques. It uses a mathematical algorithm that helps to find out major critical jobs on any project schedule.

Forward pass calculates the Early dates, and backward pass calculates the late dates to all the activities. Early dates represent the most optimistic start and end dates of any project schedule. On the other hand, late dates suggest that the latest activities can be started and finish without impacting the project's finish date.

Question 57: Is Critical Path the longest or shortest?

Answer: Critical path is the longest continuous chain of activities. It is the longest in terms of path and shortest in terms of duration to complete a project from start to finish than any other complete path on a schedule.

The **Longest Path** is for a project in its network from start to finish, and the Total Duration is longer than any other path on that particular network.

The **Critical Path** is a path where you have critical activities defined on a project schedule.

The Critical path establishes minimum project duration, and the longest path controls project early completion.

You can read more in detail here. What is Critical Path?

Question 58: If you had to rate your Primavera P6 skills, from 1-10, how would you rate it? (Real question)

Answer: Well, as you know, Primavera P6 is a potent and versatile software. But I would rate myself only 6 or 7 as compared to my working colleagues.

Question 59: How do you spend the most time doing each day?

Answer: I use Facebook a lot – Kidding! On a normal day, I review reports of contractors, site engineers, client's comments, and implementations. Daily construction meeting and prepare Minutes of Meeting – MON and send a summary to the stakeholders.

Question 60: What is the Revised Plan & how it differs from the Recovery Plan?

Answer: If we get any change in scope (Change Order) or claim, that may lead to a change in the finish date (either positive or negative). In Recovery Plan, that finish date is fixed.

Question 61: What is Lead and Lag in Primavera P6?

Answer: Both are the time duration that we can put to wait or accelerate the successor activity. A lag is a lazy start, and the lead is an acceleration for the successor activity. A lead is just a negative lag.

Question 62: What is Fast Tracking & Crashing?

Answer: Both are schedule compression techniques. Once a project plan is lagging, then we are asked to make a recovery plan. In the recovery plan, we use these techniques/techniques. In fast-tracking, we put activities in parallel. This increases risk. But in crashing, we add more resources to cover up the lag. This is not risky, but you need more budget in this scenario. If you need to accelerate because of the other party like the client-side, then being a contractor always ensures acceleration. That may have a higher unit rate than in the actual contract.

Question 63: Differentiate between Gantt chart & Network Diagram?

Answer: Both are project management tools that help the teams to see the project at a glance.

Gantt Chart displays activities, tasks, events plotted against time. It gives information like activities start & finish, overlaps among activities. Start and end at the WBS level and the whole project as summary bars. The length of the bars represents the duration of any particular activity or task. **Network Diagram** explains the linkage of activities that helps to understand the flow of work.

Question 64: How much float is allowed in any plan?

Answer: There is no hard and fast rule for this, but as a thumb rule, they say 10% of the total project duration is allowed. For example, if the total duration is 300 days, then 30 days float is OK to go. If it is higher, then you need to adjust your P6 logic to decrease it to the optimum required level. By the way, it depends on the project of the project.

Question 65: How much Lag is allowed in any plan?

Answer: Lag is undesirable in a plan, so does the lead. Sometimes, lag is allowed, but they say for any activity should be less than half of the total duration of that activity. For example, if any activity duration is 14 days, then lag should be less than 7 days. Long legs are highly undesirable. You can adjust by proper logic during sequencing activities.

Question 66: New Project Manager did not like you defined WBS in the approved plan; what will you do now?

Answer: No problem, I will use the <u>Activity Codes function</u> in Primavera P6 to get the desired one for any division he/she likes

Question 67: What information is of your concern in a Project Charter?

Answer: Project Charter contains a high level of concise information about the project like Project scope, governance, timeline, budget, constraints, and risk. It should be a maximum of 6 pages document, and the team needs to read and grab all the information included in there. You read more and see a <u>Project Charter Example</u>.

Question 68: What is the difference between Earned Manhours and Actual Manhours?

Answer: The Earned Man-hour is the achieved or completed man-hours, and the actuals are the man-hours spent on an activity or project.
For Example: Say we have to build a wall through masonry block-work. We estimated that it needs 100 man-hours, and it will take 5 days to complete the work.
If we hire 4 masons and at the end of 2 days, it is reported that 2 masons were working on it, and 25% of work is done overall.
Therefore from the above scenario, we got 100 man-hours for 5 days of work
Productivity is 100/5 = 20 man-hours/day
Work completed 25%
Earned Man-hours = work completed X Total budget (man-hours)
= 25%X100
Earned Man-hours = 25 man-hours

Question 69: How you compress (make a recovery) a schedule in Primavera P6?

Answer: First of all, I insert the column to see the Total Float then try to find the logic to reduce the float. I have options like to make activities in parallel (Fast Tracking). Otherwise;

- I filter the critical path.
- Reduce the duration of activities on the critical path
- Again filter the critical path and reduce the duration again – As the path may change now.
- Apply the same steps until the required compression is got.
- This is called Crashing, as here we need to add resources to get the job done.

This can be used for Recovery Plan, Mitigation Plan, Acceleration, etc., whatever is the name. In the Recovery Plan, the project end date is fixed.

Make sure to align your team before performing any procedure.

**Question 70: Why Planning is important in any project?**

Answer: Planning or the initiation phases are very prone to risk. If not done properly, then the outcome of that particular project may be a drastic one. Below the graph is a clear example.
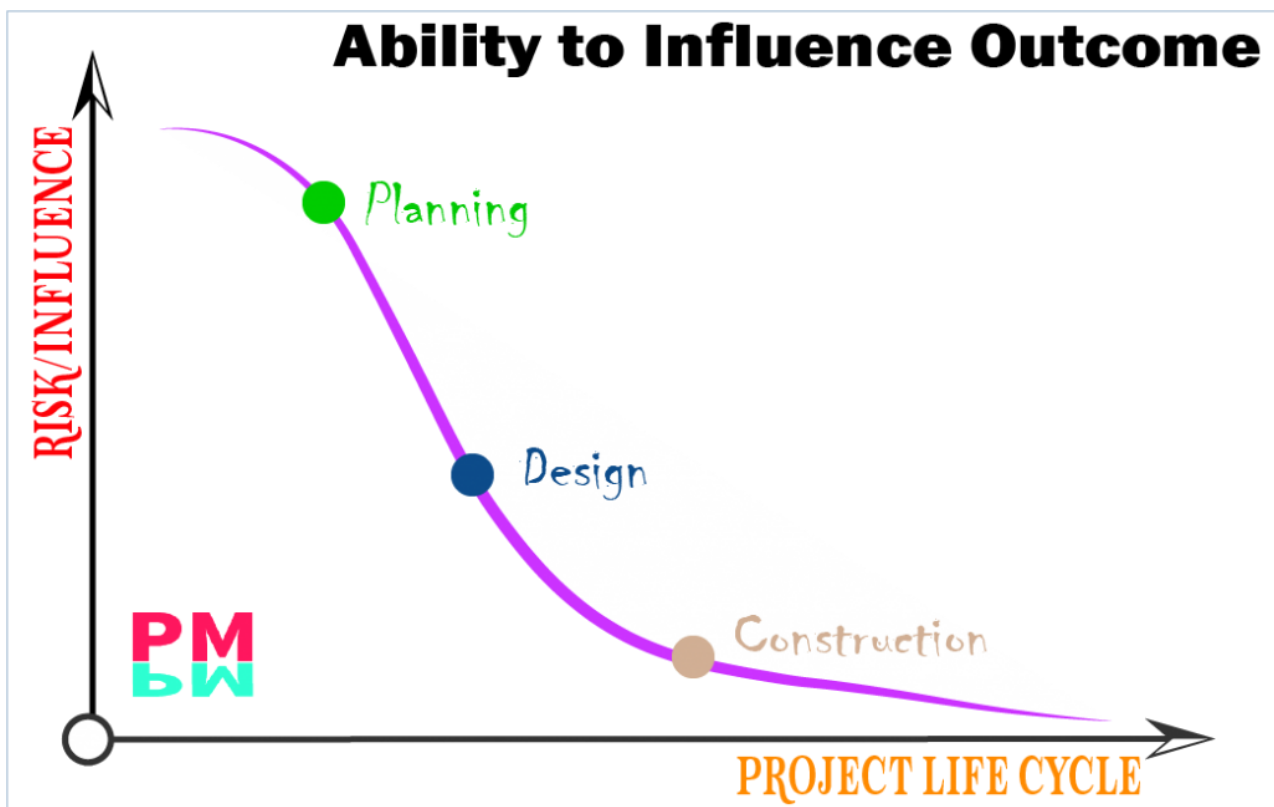
Question 71: What is the relation between Planning and Cost Change?

Answer: As already said, the project is prone to risk at initial stages and will impact the out the most or even project termination occurs at these stages.

But the cost change is minimum at the start of the project and maximum as the project progresses. This is the reason why Planning is one of the most important phases of any project.

Ability to Influence & Cost Change
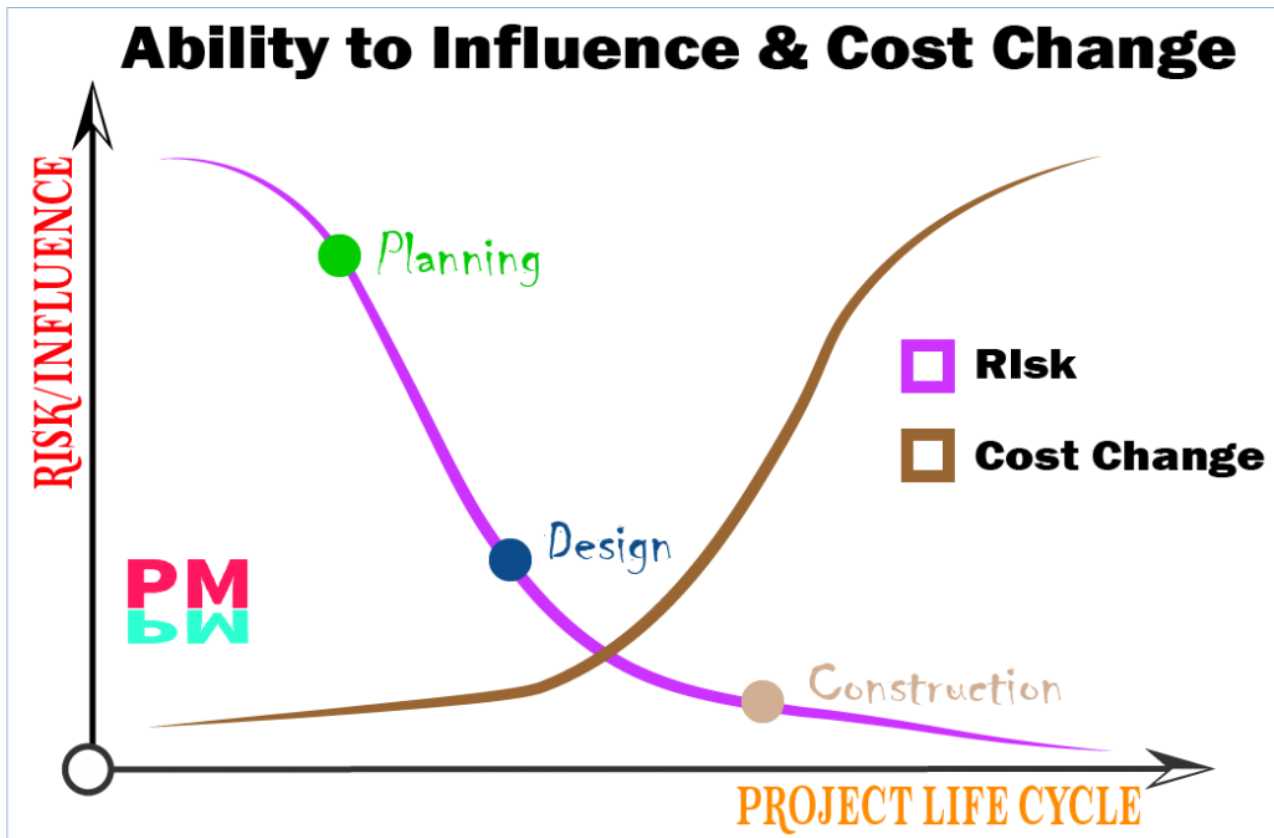
## Question 72: What you know about the Earned Value Management system?

Answer: In the <u>Earned value management</u> system, we use historical data to forecast the future.

Here, we draw curves to find out the project situation but not limited to;

- The project is on budget.
- The project is on schedule.

See this graph to understand more about CPI, SPI, BCWS, BAC, Schedule Slippage, Variance, EV, AC, and PV, as we have discussed earlier.

Earned Value Management System
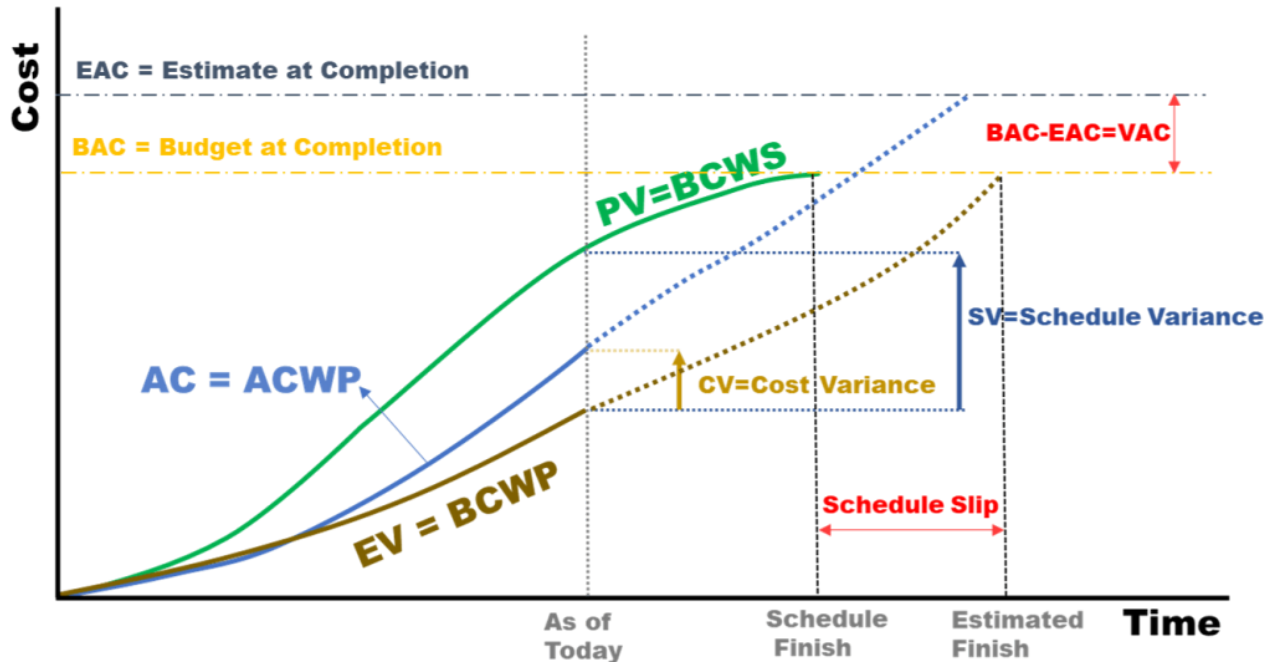
Question 73: What are the basic differences between PERT & CPM?

Answer: <u>PERT</u> is a project management technique that we apply to manage any project's uncertain activities. On the other hand, a <u>Critical Path method</u> – CPM is a statistical technique where we have a set of well-determined activities of the given project.

In CPM, we do a one-time estimate, while in PERT, we use a three-time estimate like Optimistic, Most Likely & Pessimistic.
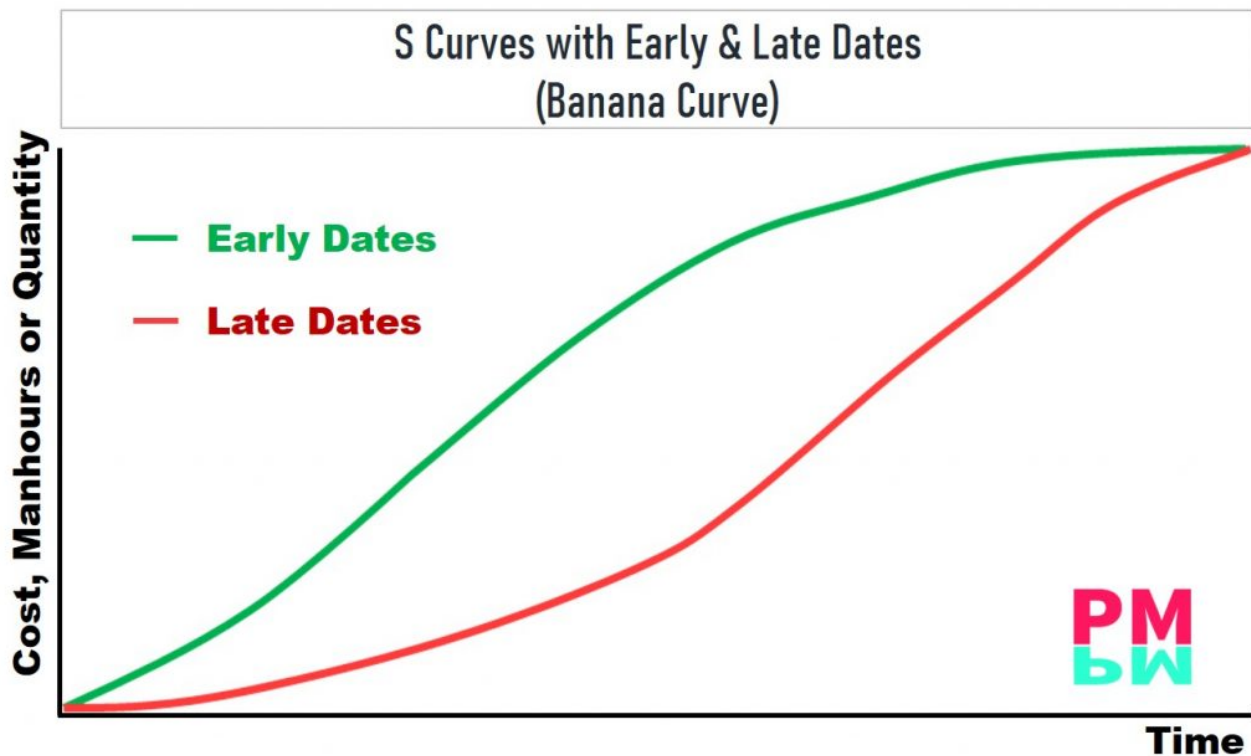
Both PERT and CPM help the project manager of the stakeholders to manage and control the project outcomes in a systematic approach.

We use PERT if we have time priority and cannot delay any. But we use CPM to control both Time & cost simultaneously.

Question 74: What is a Banana Curve?

Answer: During planning, we load a program with resources like Manhours, Quantities, and or Cost. Software like Primavera P6, MS Project, etc., can give us two types of curves for early and late dates. When we combine these curves, it gives us a shape like a banana. That's why it is called Banana Curve.

If the project slips below the Red zone, then it is an alarming thing that should be fixed immediately without any delay.

**S Curves with Early & Late Dates
(Banana Curve)**

— **Early Dates**
— **Late Dates**

Cost, Manhours or Quantity

Time

Question 75: How can we manage a Project Portfolio as a Planner/Schedule?
| Planning Team 2/4 WhatsApp Group

Answer: Yes, as a planner, I can help Project Portfolio Manager provide high-level information that I will take from Rolling Up my plan to the desired level as per requirement. This will help the Portfolio Manager find out outcomes and forecasts, and we can further dig deeper into the activity level if needed. – Prem Prakash

Question 76: what is the difference between cost S Curve and Cash Flow?

Answer: Cash flow is in a month-wise table format on actual, tentative cash receipts and expenditure for the whole project duration, including subcontractor expenses. Cash flow also covers the contingency part.

S curve, generally the actual and tentative cash receipt from the client. Some companies using the above cash flow format and use the data to represent in the S curve, which gives a better understanding than the tabular format. – Adnan Khan

Question 77: Is mitigation and recovery schedule the same?

Answer: Mitigation Schedule – Mitigation strategies are intended to stem the flow of expected slip in the forward pass (negative-float). Just like a recovery schedule, a mitigation schedule should necessitate a narrative and report of changes made.

Recovery Schedule – Since a recovery schedule is to formulate the project/contractor's plan to recover time, the recovery schedule is created by the project PMC/ contractor. As with the approved progress schedule, the recovery schedule is created and managed by and is the contractor's responsibility. – Adnan Khan

Question 78: What do you mean by the earned schedule?

Answer: It is an extension of earned value. In earned value, usually, the schedule is compared against $ value wherein earned schedule it compares with time duration. That makes more sense where we talk about progress in terms of time, not in $ value. – Adnan Khan

Question 79: When you normally ask the contractor to submit a recovery schedule

Answer: When we see a progress deviation/lagging of around 20%, we immediately ask for a recovery schedule. – Adnan Khan

Question 80: What is CPLI Critical Path Length Index?

Answer: CPLI is the concept adopted in DCMA 14 point schedule assessment principle.

That is Project critical path length + project float/project critical path.

If the above ratio = 1, it gives them confidence that the critical path is real, and project completion is intact.

If the ratio <1, the critical path that we derived is consistent. There is a high chance; the project may fail.

If the ratio >1, the project is in good health, will get completed ahead of schedule.

To be Continued!

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To say thanks for this effort!