**Assignment 4: Critical Path Analysis (16 points)**

Consider the table below, which includes time and activity data for a Small IT Project. All duration estimates or estimated times are in days. Perform a critical path analysis for this project.

|  |  |  |
| --- | --- | --- |
| **Activity** | **Duration (Days)** | **Predecessor** |
| A | 8 | - |
| B | 11 | A |
| C | 19 | A |
| D | 6 | A |
| E | 20 | B, D |
| F | 7 | C, E |
| G | 27 | E |
| H | 25 | B |
| I | 13 | F |
| J | 8 | H, G, I |

1. Draw a network diagram representing the project. MS PowerPoint or Visio are good tools for this task. (5 points)

Diagram

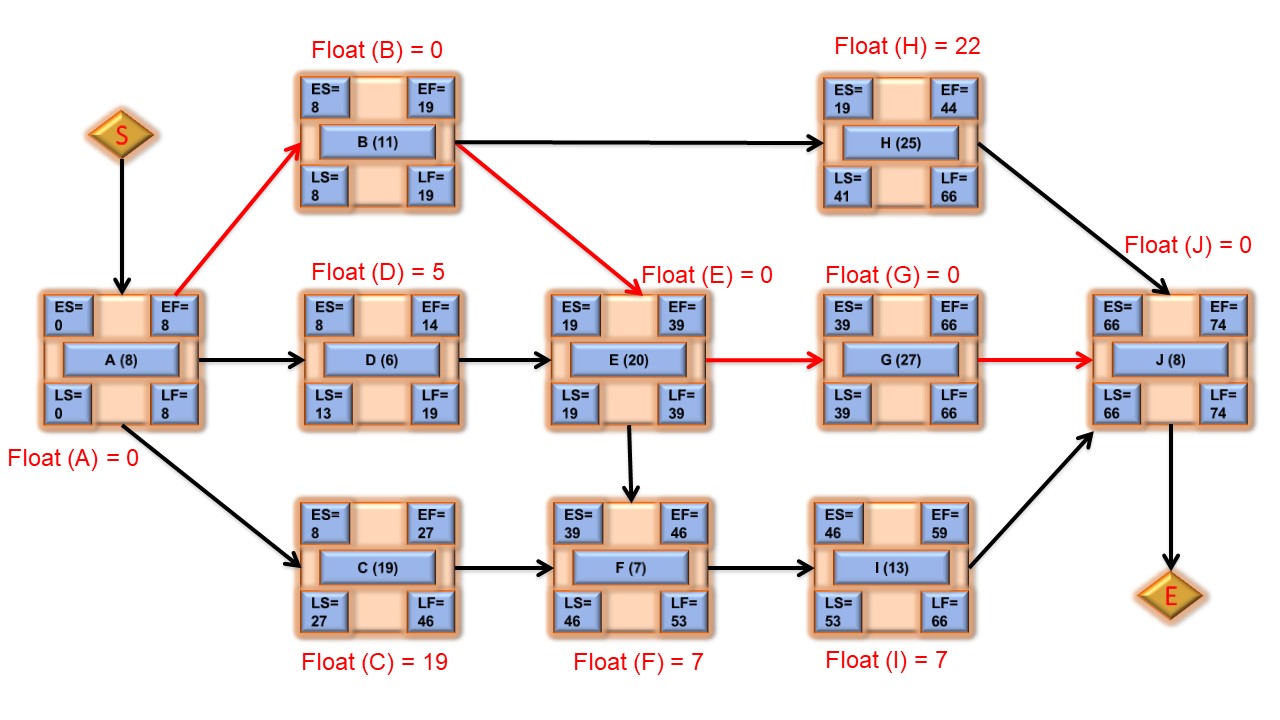
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1. Identify and list all of the paths through the network diagram and note how long they are. (3 points)

Ans:

|  |  |
| --- | --- |
| PATHS | LENGTH |
| A,B,H,J | 52 units |
| A,B,E,G,J | 74 units |
| A,B,E,F,I,J | 67 units |
| A,D,E,G,J | 69 units |
| A,D,E,F,I,J | 62 units |
| A,C,F,I,J | 47 units |

1. Calculate the float for all the activities in the network diagram. There are 10 activities in the table above and you must show the early and late start/ finish dates to receive credit for this question. (5 points)



Float (A) = 0 Float (E) = 0 Float (I) = 7

Float (B) = 0 Float (F) = 7 Float (J) = 0

Float (C) = 19 Float (G) = 0

Float (D) = 5 Float (H) =22

1. What is the timeline within which the project can earliest be completed and explain why you say so? (1 points)

Ans : The earliest timeline within which project can be completed is **74** days, because the critical path calculated for the project is 74.

1. If D takes 4 days, what will be the impact to the project and the critical path? Explain your reasoning. (1 points)

Ans : If D takes 4 days, there will be no impact on critical path and project timeline, but now D will have more float time (7 days) and its ES = 8, EF = 12, LS = 15, LF = 19

1. If G takes an additional 7 days, what will be the impact to the project and the critical path? Explain your reasoning. (1 points)

Ans: If G takes additional 7 days, critical path and project timeline will increase by 7 days i.e. new critical path will be 81 days. Thus, earliest timeline of the project will be 81 days. This is because G is the part of critical path.