# Tribhuvan University

## Faculty of Humanities and Social Sciences

Software Project Management

A LAB REPORT

Submitted to

Department of Computer Application

Shahid Smarak College

*In partial fulfillment of the requirements for the Bachelors in Computer Application*


**Submitted by: -**

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**Internal supervisor**

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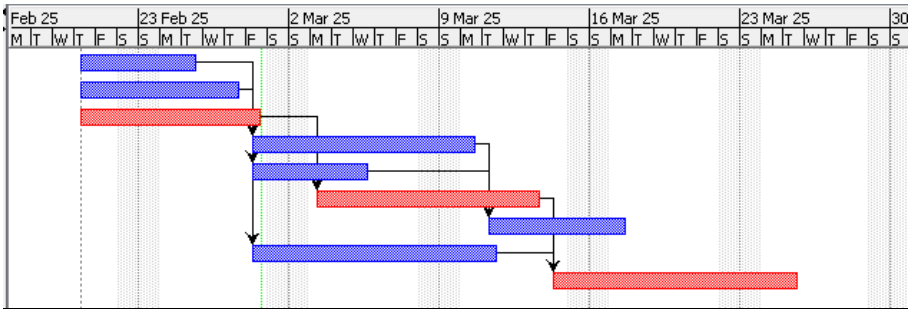
# Table of Contents

# Question 1

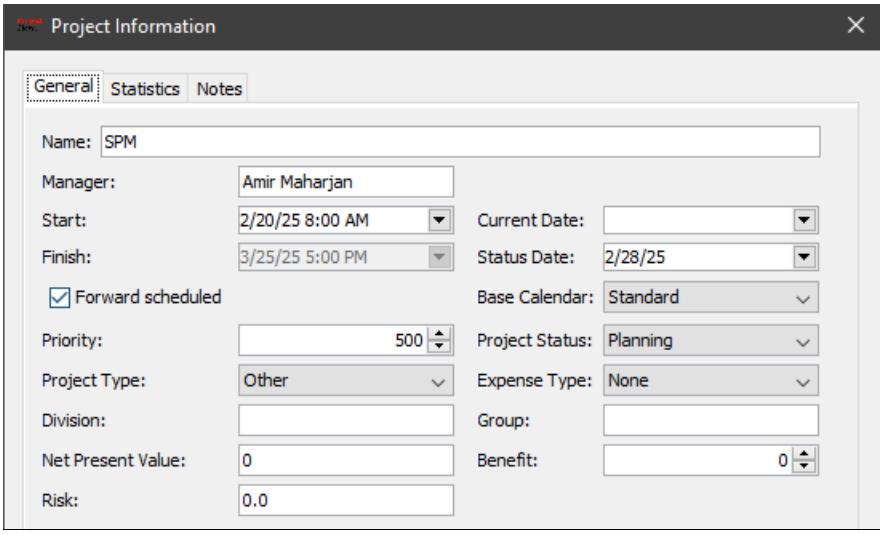
Draw a precedence network diagram by performing forward and backward passes. Also determine the critical path and completion date of the project. (Use the information given in the table).

| Activity | Immediate Predecessor | Duration |
|---|---|---|
| A | None | 4 days |
| B | None | 6 days |
| C | None | 7 days |
| D | A, B | 7 days |
| E | B | 4 days |
| F | C | 9 days |
| G | D, E | 5 days |
| H | B | 8 days |
| I | F, H | 8 days |

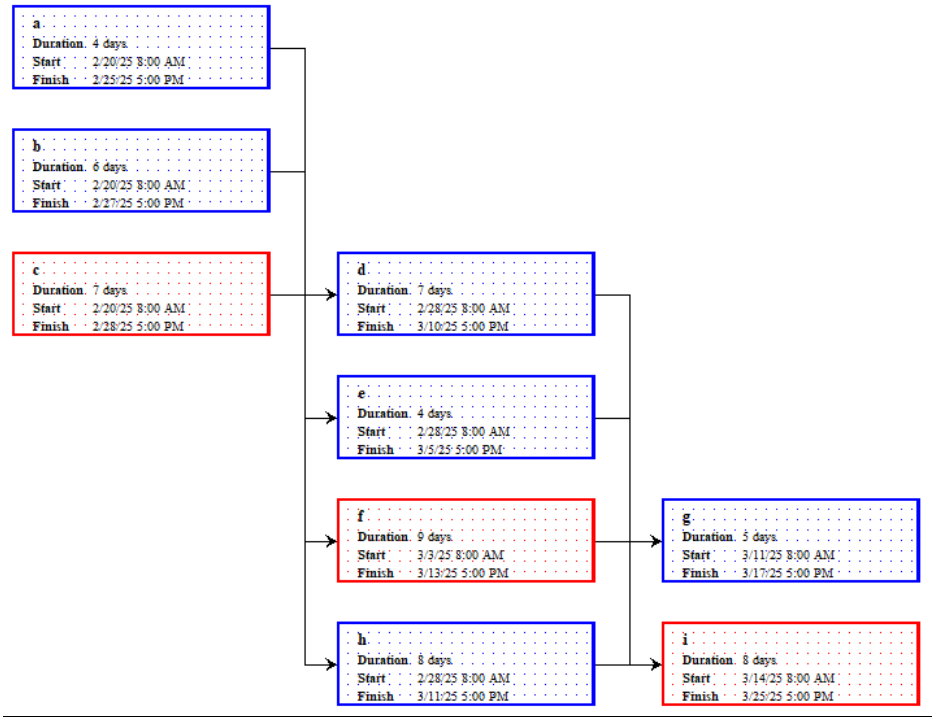
**Gantt Chart**




**Information**



## Network Diagram




## Forward Pass

| | Name | Duration | Predecessors | ES | EF |
|---|---|---|---|---|---|
| 1 | a | 4 days | | 0 | 4 |
| 2 | b | 6 days | | 0 | 6 |
| 3 | c | 7 days | | 0 | 7 |
| 4 | d | 7 days | 1;2 | 6 | 13 |
| 5 | e | 4 days | 2 | 6 | 10 |
| 6 | f | 9 days | 3 | 7 | 16 |
| 7 | g | 5 days | 4;5 | 13 | 18 |
| 8 | h | 8 days | 2 | 6 | 14 |
| 9 | i | 8 days | 6;8 | 16 | 24 |

## Backward Pass

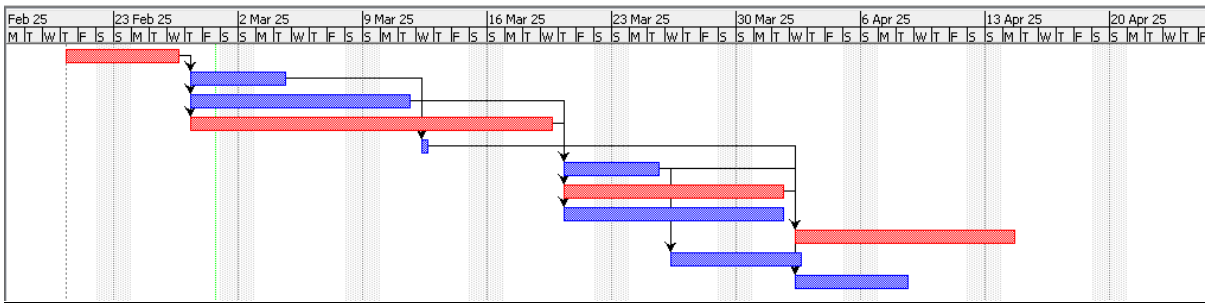
| | Name | Duration | Successors | LS | LF |
|---|---|---|---|---|---|
| 1 | a | 4 days | 4 | 4 | 8 |
| 2 | b | 6 days | 4;5;8 | 2 | 8 |
| 3 | c | 7 days | 6 | 0 | 7 |
| 4 | d | 7 days | 7 | 8 | 15 |
| 5 | e | 4 days | 7 | 8 | 12 |
| 6 | f | 9 days | 9 | 7 | 16 |
| 7 | g | 5 days | | 15 | 20 |
| 8 | h | 8 days | 9 | 8 | 16 |
| 9 | i | 8 days | | 16 | 24 |

# Question 2

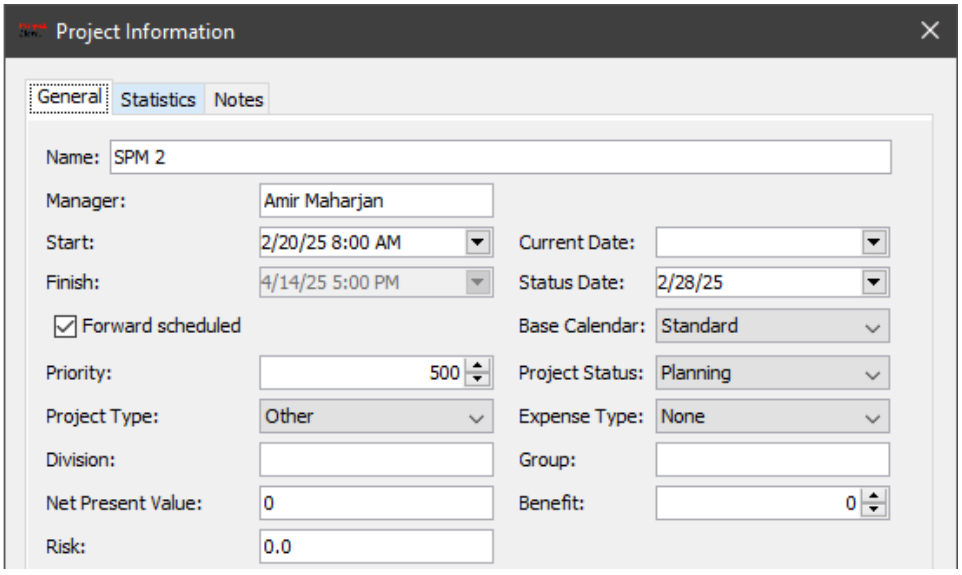
Draw a precedence network diagram by performing forward and backward passes. Also determine the critical path and completion date of the project. (Use the information given in the table)

| Activity | Immediate Predecessor | Duration |
|---|---|---|
| B | | 5 days |
| M | B | 4 days |
| N | B | 9 days |
| Q | B | 15 days |
| A | M, N | 1 day |
| F | N, Q | 4 days |
| X | Q | 9 days |
| C | Q | 9 days |
| Y | A, F, X | 9 days |
| S | F | 6 days |
| J | X, F | 5 days |

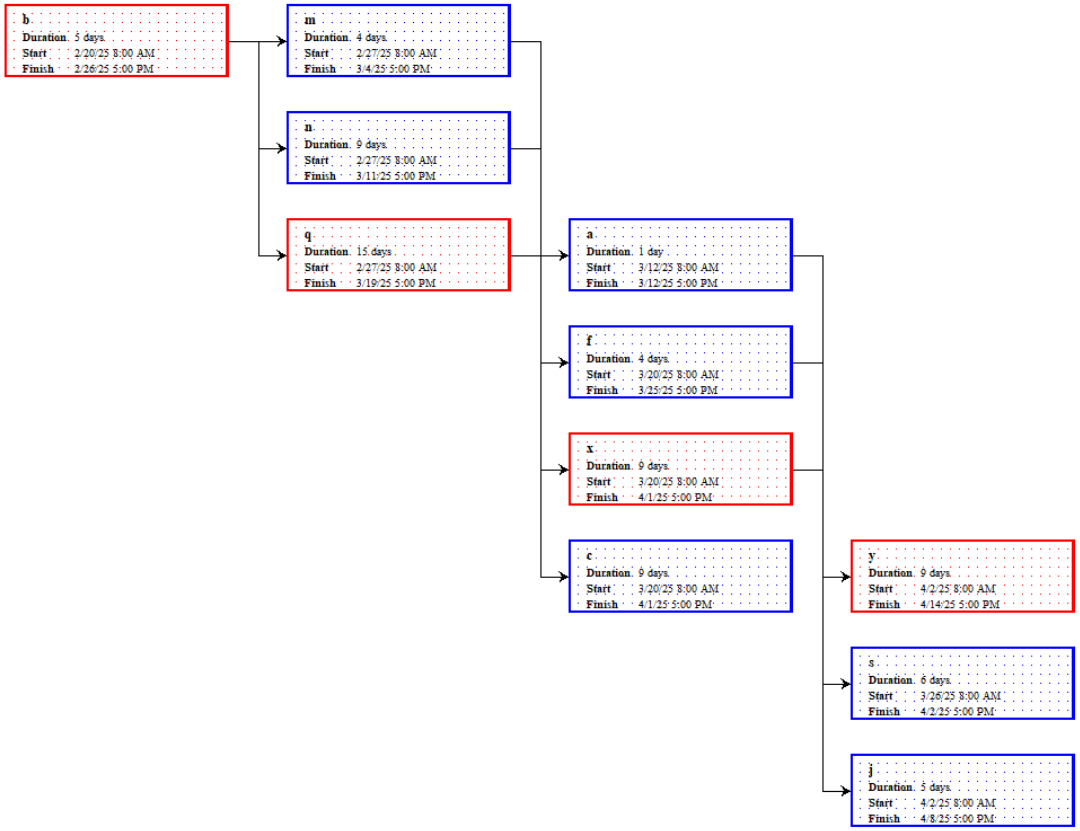
## Gantt Chart




## Information



## Network Diagram




## Forward pass

| | Name | Duration | Predecessors | ES | EF |
|---|---|---|---|---|---|
| 1 | b | 5 days | | 0 | 5 |
| 2 | m | 4 days | 1 | 5 | 9 |
| 3 | n | 9 days | 1 | 5 | 14 |
| 4 | q | 15 days | 1 | 5 | 20 |
| 5 | a | 1 day | 2;3 | 14 | 15 |
| 6 | f | 4 days | 3;4 | 20 | 24 |
| 7 | x | 9 days | 4 | 20 | 29 |
| 8 | c | 9 days | 4 | 20 | 29 |
| 9 | y | 9 days | 5;6;7 | 29 | 28 |
| 10 | s | 6 days | 6 | 24 | 30 |
| 11 | j | 5 days | 6;7 | 29 | 34 |

## Backward Pass

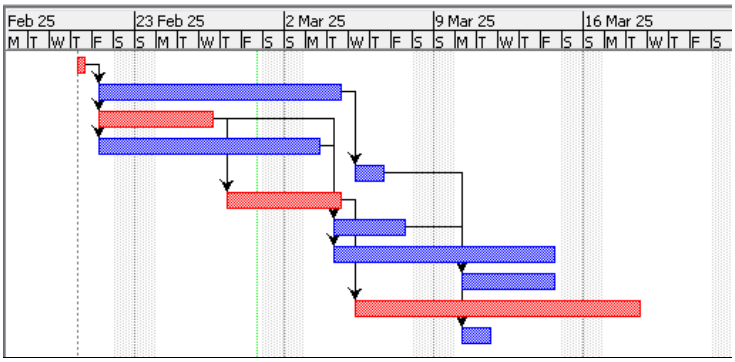
| | Name | Duration | Successors | LF | LS |
|---|---|---|---|---|---|
| 1 | b | 5 days | 2;3;4 | 1 | 4 |
| 2 | m | 4 days | 5 | 24 | 20 |
| 3 | n | 9 days | 5;6 | 21 | 12 |
| 4 | q | 15 days | 6;7;8 | 16 | 1 |
| 5 | a | 1 day | 9 | 25 | 24 |
| 6 | f | 4 days | 9;10;11 | 25 | 21 |
| 7 | x | 9 days | 9;11 | 25 | 16 |
| 8 | c | 9 days | | 34 | 25 |
| 9 | y | 9 days | | 34 | 25 |
| 10 | s | 6 days | | 34 | 28 |
| 11 | j | 5 days | | 34 | 29 |

# Question 3

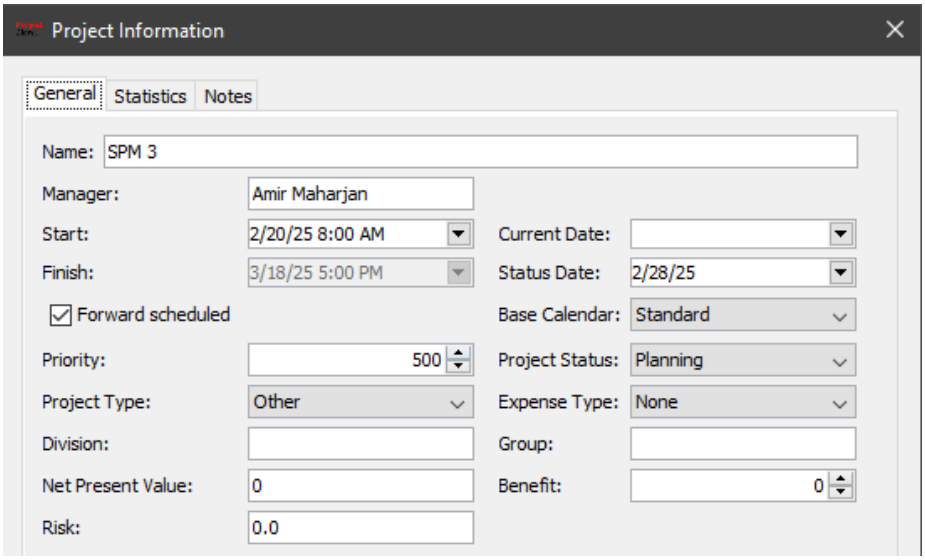
Draw a precedence network diagram by performing forward and backward passes. Also determine the critical path and completion date of the project. (Use the information given in the table).

| Activity | Immediate Predecessor | Duration |
|---|---|---|
| A | | 1 day |
| B | A | 8 days |
| C | A | 4 days |
| P | A | 7days |
| L | B | 2 days |
| M | C | 4 days |
| Q | P, C | 4 days |
| N | P | 9 days |
| Y | L, Q | 5 days |
| F | M | 10 days |
| J | Q | 2 days |

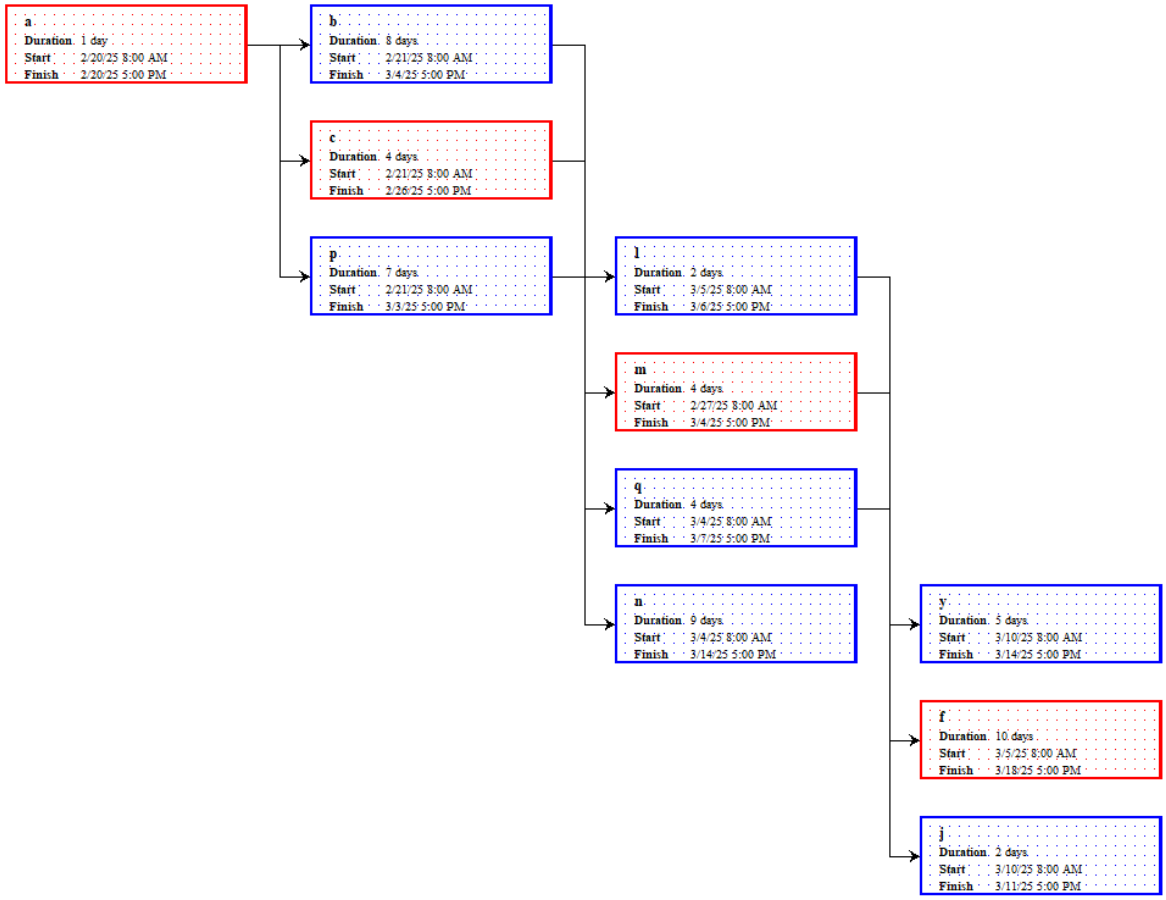
## Gantt Chart




## Information



## Network Diagram




## Forward Pass

| | Name | Duration | Predecessors | ES | EF |
|---|---|---|---|---|---|
| 1 | a | 1 day | | 0 | 1 |
| 2 | b | 8 days | 1 | 1 | 9 |
| 3 | c | 4 days | 1 | 1 | 5 |
| 4 | p | 7 days | 1 | 1 | 8 |
| 5 | l | 2 days | 2 | 9 | 11 |
| 6 | m | 4 days | 3 | 5 | 9 |
| 7 | q | 4 days | 3;4 | 8 | 12 |
| 8 | n | 9 days | 4 | 8 | 17 |
| 9 | y | 5 days | 5;7 | 12 | 17 |
| 10 | f | 10 days | 6 | 9 | 19 |
| 11 | j | 2 days | 7 | 12 | 14 |

## Backward Pass

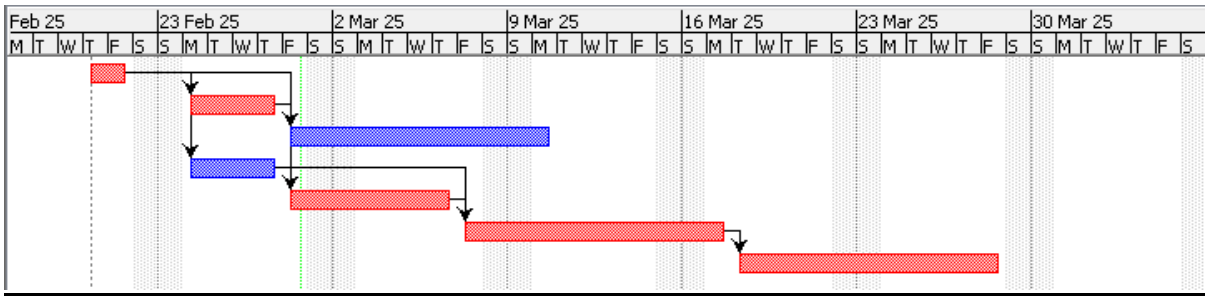
| | Name | Duration | Successors | LF | LS |
|---|---|---|---|---|---|
| 1 | a | 1 day | 2;3;4 | 2 | 1 |
| 2 | b | 8 days | 5 | 12 | 4 |
| 3 | c | 4 days | 6;7 | 6 | 2 |
| 4 | p | 7 days | 7;8 | 10 | 3 |
| 5 | l | 2 days | 9 | 14 | 12 |
| 6 | m | 4 days | 10 | 9 | 6 |
| 7 | q | 4 days | 9;11 | 14 | 10 |
| 8 | n | 9 days | | 19 | 10 |
| 9 | y | 5 days | | 19 | 14 |
| 10 | f | 10 days | | 19 | 9 |
| 11 | j | 2 days | | 19 | 17 |

# Question 4

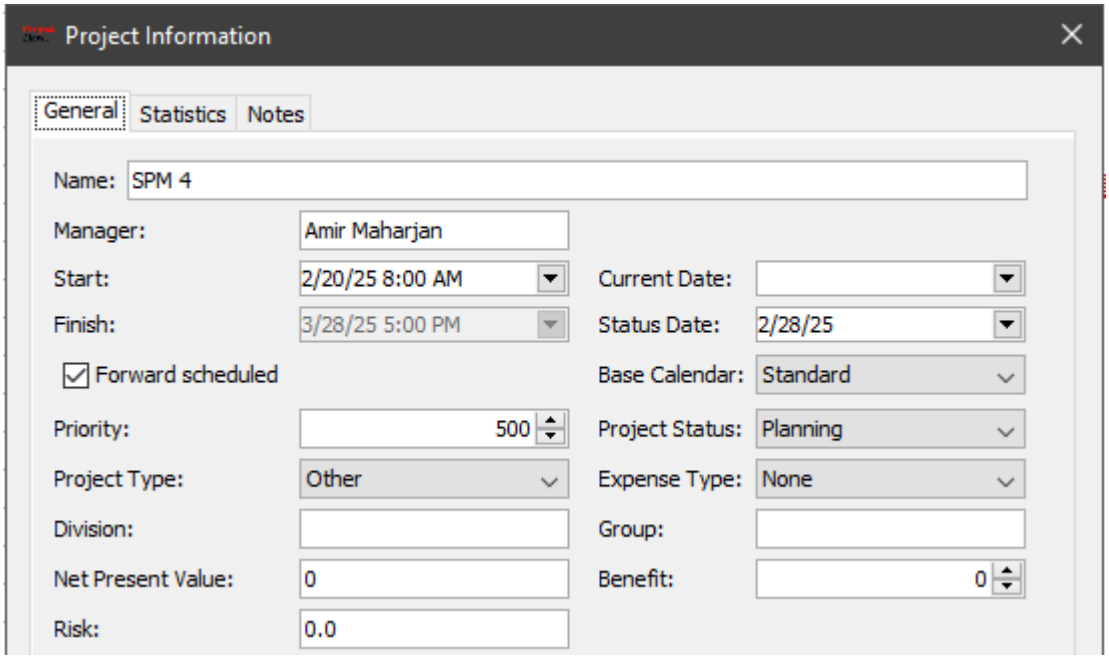
Draw a precedence network diagram by performing forward and backward passes. Also determine the critical path and completion date of the project. (Use the information given in the table).

| Activity | Immediate Predecessor | Duration |
|---|---|---|
| A | | 2 days |
| B | A | 4 days |
| C | A, B | 7 days |
| P | A | 4 days |
| X | B | 5 days |
| Z | P, X | 7 days |
| Y | Z | 9 days |

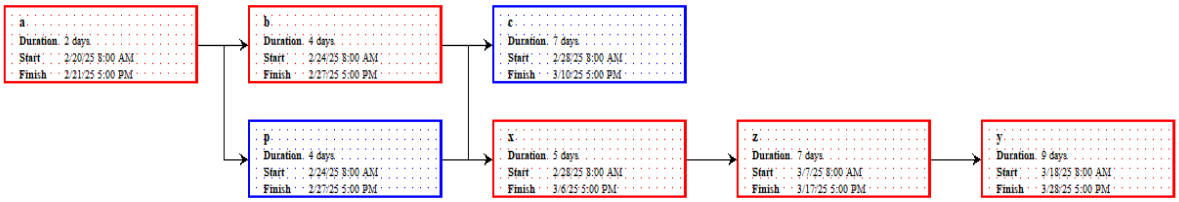
## Gantt Chart




## Information



## Network Diagram




## Forward Pass

| | Name | Duration | Predecessors | ES | EF |
|---|---|---|---|---|---|
| 1 | a | 2 days | | 0 | 2 |
| 2 | b | 4 days | 1 | 2 | 6 |
| 3 | c | 7 days | 1;2 | 6 | 13 |
| 4 | p | 4 days | 1 | 2 | 6 |
| 5 | x | 5 days | 2 | 6 | 11 |
| 6 | z | 7 days | 4;5 | 11 | 18 |
| 7 | y | 9 days | 6 | 18 | 27 |

## Backward Pass

| | Name | Duration | Successors | LF | LS |
|---|---|---|---|---|---|
| 1 | a | 2 days | 2;3;4 | 2 | 0 |
| 2 | b | 4 days | 3;5 | 6 | 2 |
| 3 | c | 7 days | | 27 | 20 |
| 4 | p | 4 days | 6 | 11 | 7 |
| 5 | x | 5 days | 6 | 11 | 6 |
| 6 | z | 7 days | 7 | 18 | 11 |
| 7 | y | 9 days | | 27 | 18 |

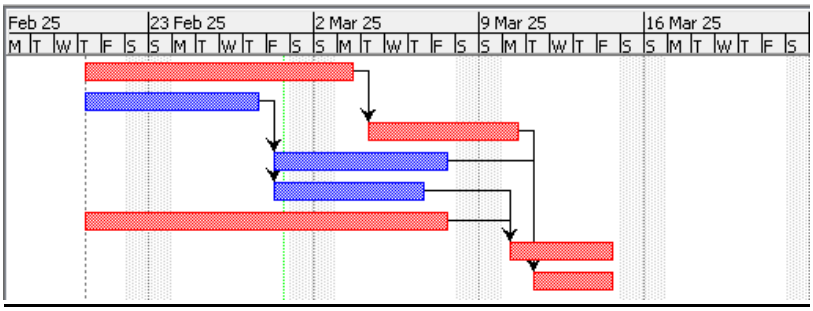
# Question 5

Consider the following table of information:

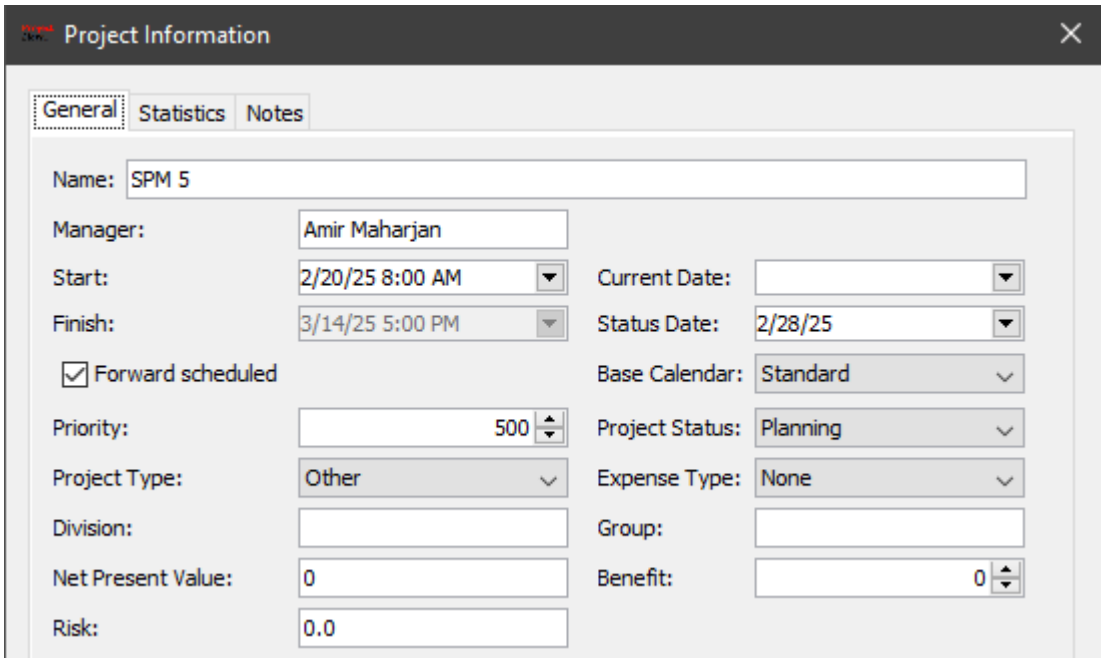
| Activity | Duration(week) | Precedents |
|---|---|---|
| A | 8 | None |
| B | 6 | None |
| C | 5 | A |
| D | 6 | B |
| E | 5 | B |
| F | 12 | None |
| G | 5 | E, F |
| H | 4 | C, D |

Draw the precedence network diagram and Gantt Chart.

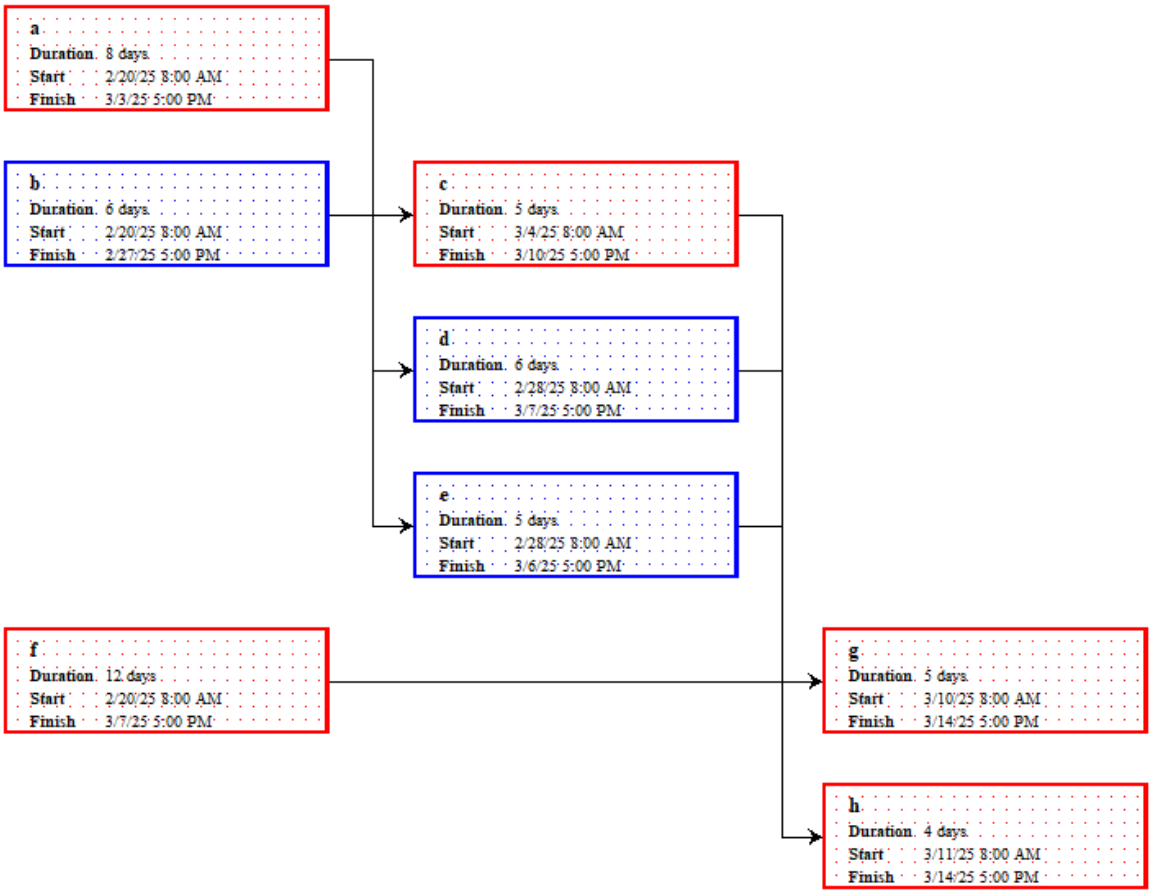
**Gantt Chart**




**Information**



## Network Diagram




## Forward Pass

| | Name | Duration | Predecessors | ES | EF |
|---|---|---|---|---|---|
| 1 | a | 8 days | | 0 | 8 |
| 2 | b | 6 days | | 0 | 6 |
| 3 | c | 5 days | 1 | 8 | 13 |
| 4 | d | 6 days | 2 | 6 | 12 |
| 5 | e | 5 days | 2 | 6 | 11 |
| 6 | f | 12 days | | 0 | 12 |
| 7 | g | 5 days | 5;6 | 12 | 17 |
| 8 | h | 4 days | 3;4 | 13 | 17 |

## Backward Pass

| | Name | Duration | Successors | LF | LS |
|---|---|---|---|---|---|
| 1 | a | 8 days | 3 | 8 | 0 |
| 2 | b | 6 days | 4;5 | 7 | 1 |
| 3 | c | 5 days | 8 | 13 | 8 |
| 4 | d | 6 days | 8 | 13 | 7 |
| 5 | e | 5 days | 7 | 12 | 7 |
| 6 | f | 12 days | 7 | 12 | 0 |
| 7 | g | 5 days | | 17 | 12 |
| 8 | h | 4 days | | 17 | 13 |

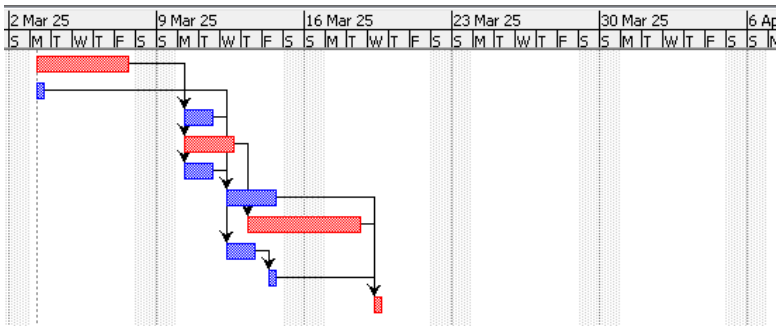
# Question 6

Consider the following table of information:

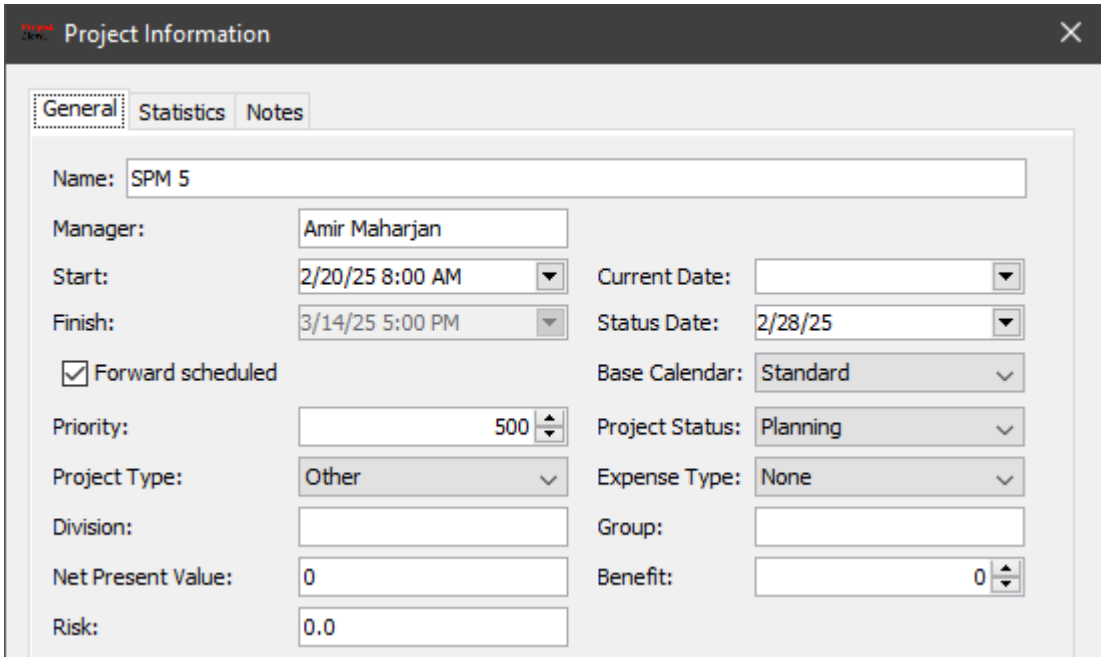
| Activity | Duration | Depends on |
|---|---|---|
| A | 5 days | - |
| B | 1 day | - |
| C | 2 days | A |
| D | 3 days | A |
| E | 2 days | A |
| F | 3 days | C |
| G | 4 days | D |
| H | 2 days | B, E |
| I | 1 days | H |
| J | 1 days | F, G. I |

Draw the precedence network diagram and Gantt Chart.

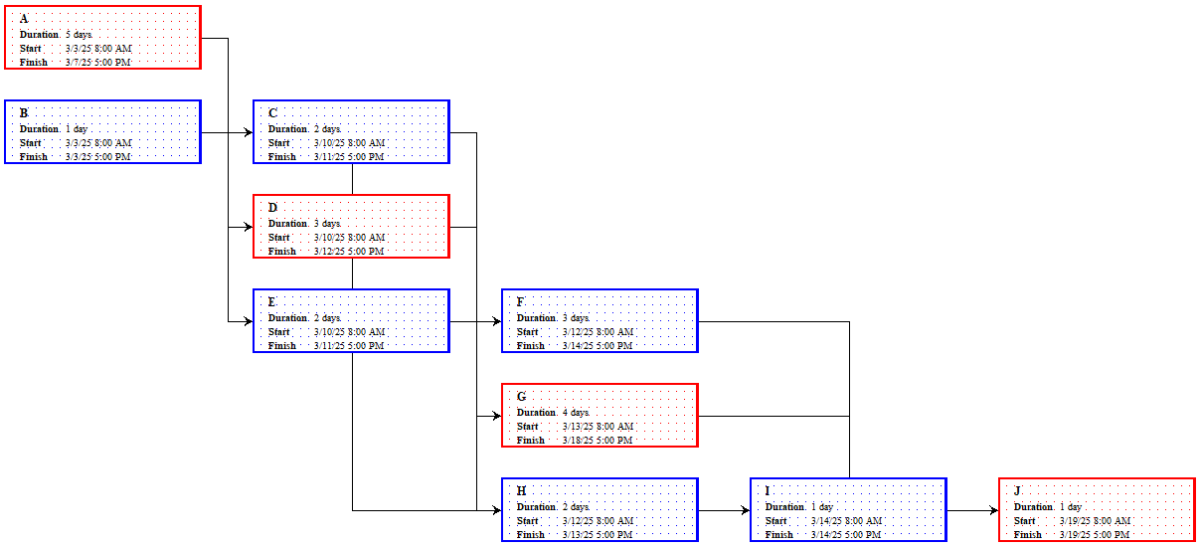
**Gantt Chart**




**Information**



## Network Diagram




## Forward Pass

| | Name | Duration | Predecessors | ES | EF |
|---|---|---|---|---|---|
| 1 | A | 5 days | | 0 | 5 |
| 2 | B | 1 day | | 0 | 1 |
| 3 | C | 2 days | 1 | 5 | 7 |
| 4 | D | 3 days | 1 | 5 | 8 |
| 5 | E | 2 days | 1 | 1 | 3 |
| 6 | F | 3 days | 3 | 7 | 10 |
| 7 | G | 4 days | 4 | 8 | 12 |
| 8 | H | 2 days | 2;5 | 3 | 5 |
| 9 | I | 1 day | 8 | 5 | 6 |
| 10 | J | 1 day | 6;7;9 | 12 | 13 |

## Backward Pass

| | Name | Duration | Successors | LF | LS |
|---|---|---|---|---|---|
| 1 | A | 5 days | 3;4;5 | 5 | 0 |
| 2 | B | 1 day | 8 | 11 | 10 |
| 3 | C | 2 days | 6 | 9 | 7 |
| 4 | D | 3 days | 7 | 8 | 5 |
| 5 | E | 2 days | 8 | 11 | 9 |
| 6 | F | 3 days | 10 | 12 | 9 |
| 7 | G | 4 days | 10 | 12 | 8 |
| 8 | H | 2 days | 9 | 13 | 11 |
| 9 | I | 1 day | 10 | 12 | 13 |
| 10 | J | 1 day | | 13 | 12 |

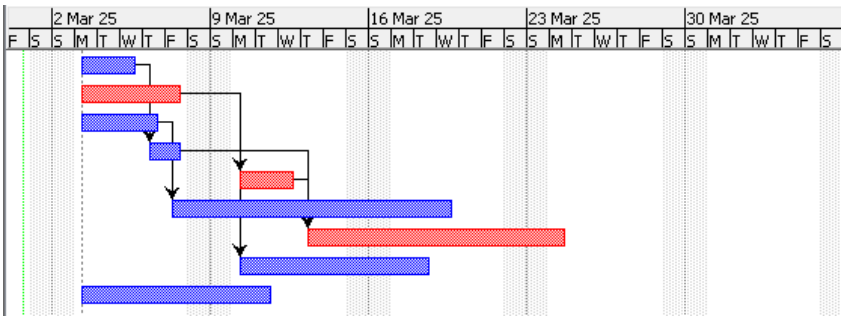
# Question 7

Consider the following table of information:

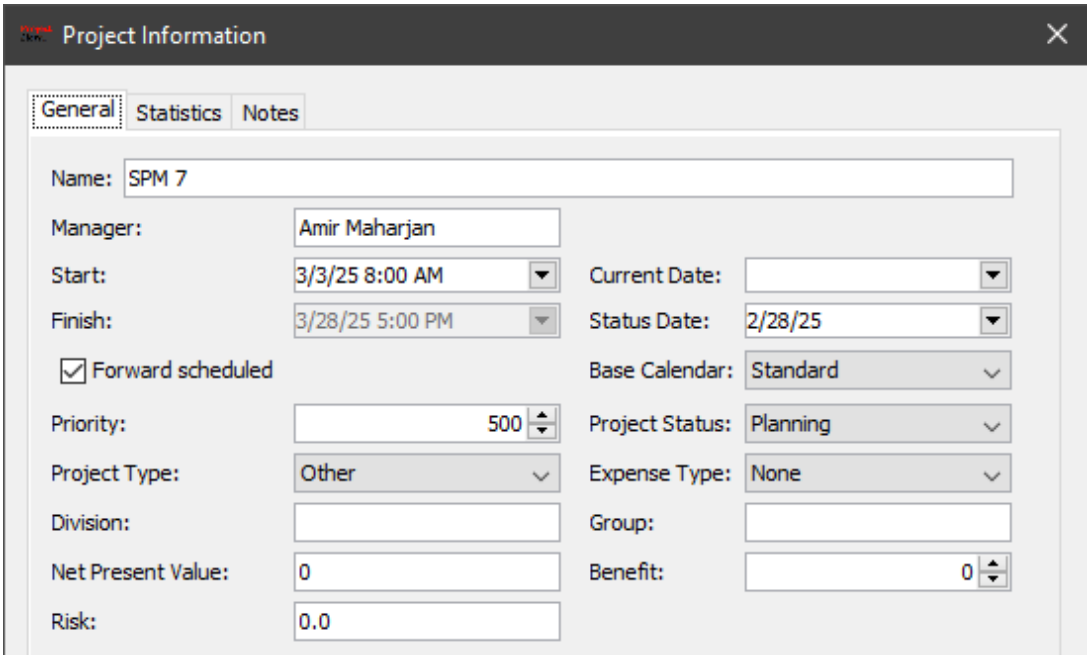
| Activity | Duration(week) | Precedents |
|---|---|---|
| A | 3 | None |
| B | 5 | None |
| C | 4 | None |
| D | 2 | A |
| E | 3 | B |
| F | 9 | C |
| G | 8 | D,E |
| H | 7 | B |
| I | 7 | F,H |

Draw the precedence network diagram and Gantt Chart.

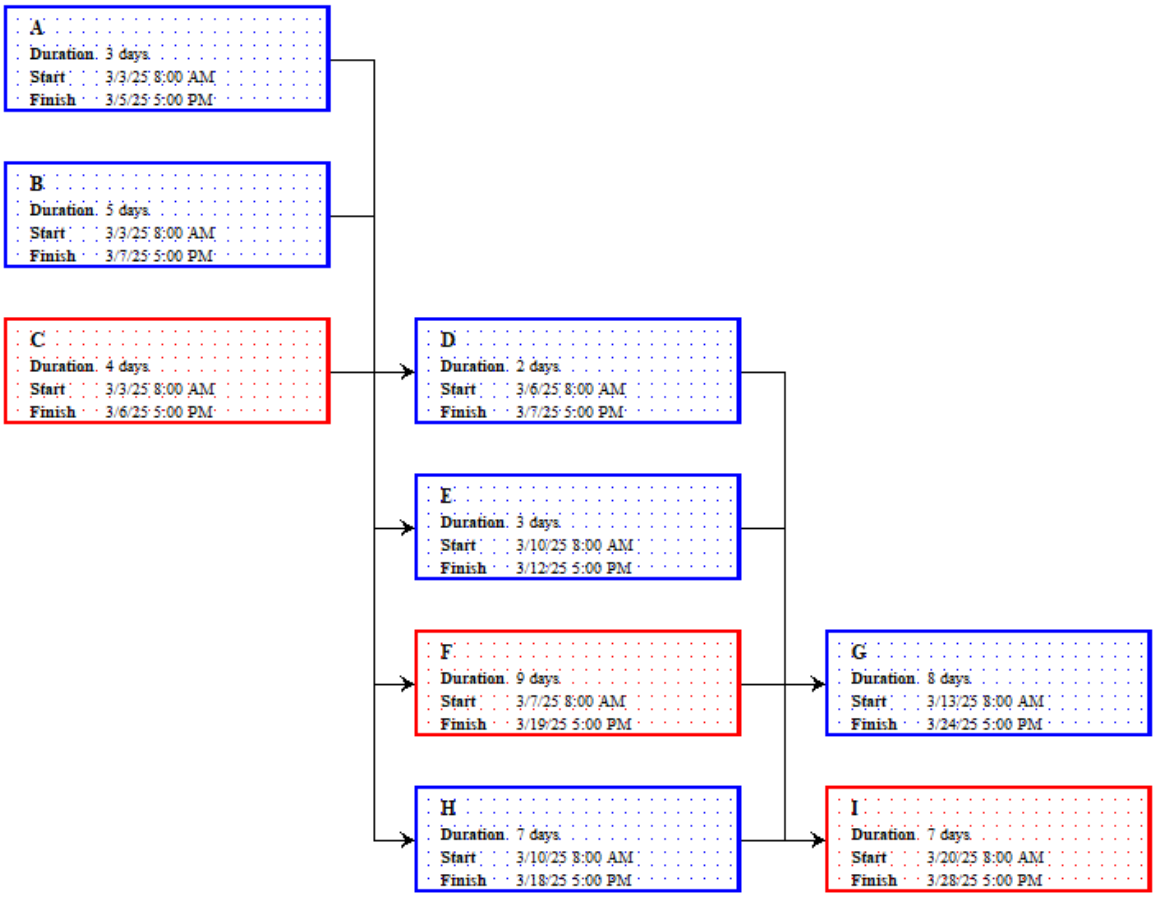
**Gantt Chart**




**Information**



## Network Diagram




## Forward Pass

| | Name | Duration | Predecessors | ES | EF |
|---|---|---|---|---|---|
| 1 | A | 3 days | | 0 | 3 |
| 2 | B | 5 days | | 0 | 5 |
| 3 | C | 4 days | | 0 | 4 |
| 4 | D | 2 days | 1 | 3 | 5 |
| 5 | E | 3 days | 2 | 5 | 8 |
| 6 | F | 9 days | 3 | 4 | 13 |
| 7 | G | 8 days | 4;5 | 8 | 16 |
| 8 | H | 7 days | 2 | 5 | 12 |
| 9 | I | 7 days | 6;8 | 13 | 20 |

## Backward Pass

| | Name | Duration | Successors | LF | LS |
|---|---|---|---|---|---|
| 1 | A | 3 days | 4 | 10 | 7 |
| 2 | B | 5 days | 5;8 | 6 | 1 |
| 3 | C | 4 days | 6 | 4 | 0 |
| 4 | D | 2 days | 7 | 12 | 10 |
| 5 | E | 3 days | 7 | 12 | 9 |
| 6 | F | 9 days | 9 | 13 | 4 |
| 7 | G | 8 days | | 20 | 12 |
| 8 | H | 7 days | 9 | 13 | 6 |
| 9 | I | 7 days | | 20 | 13 |

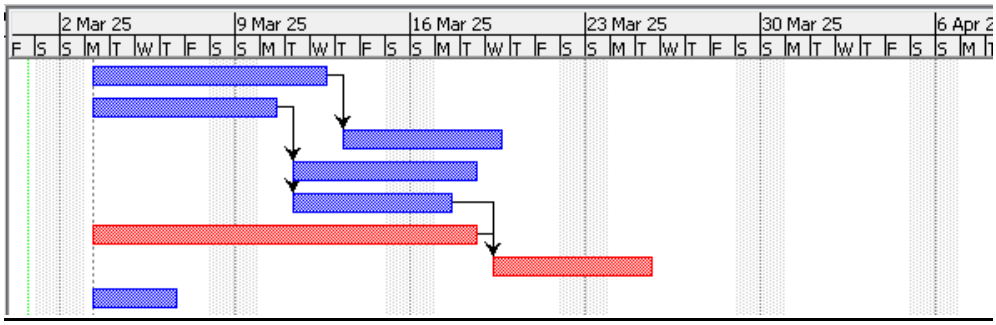
# Question 8

Consider the following table of information:

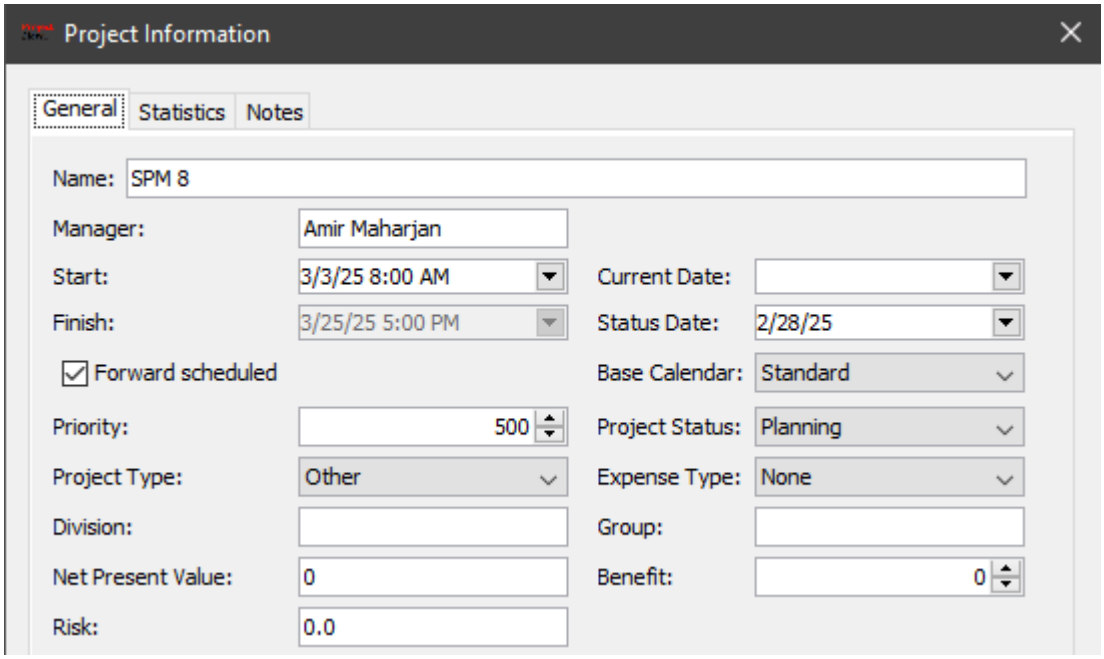
| Activity | Duration(week) | Precedents |
|---|---|---|
| A | 8 | None |
| B | 6 | None |
| C | 5 | A |
| D | 6 | B |
| E | 5 | B |
| F | 12 | None |
| G | 5 | E, F |
| H | 4 | C, D |

Draw the precedence network diagram and Gantt Chart.

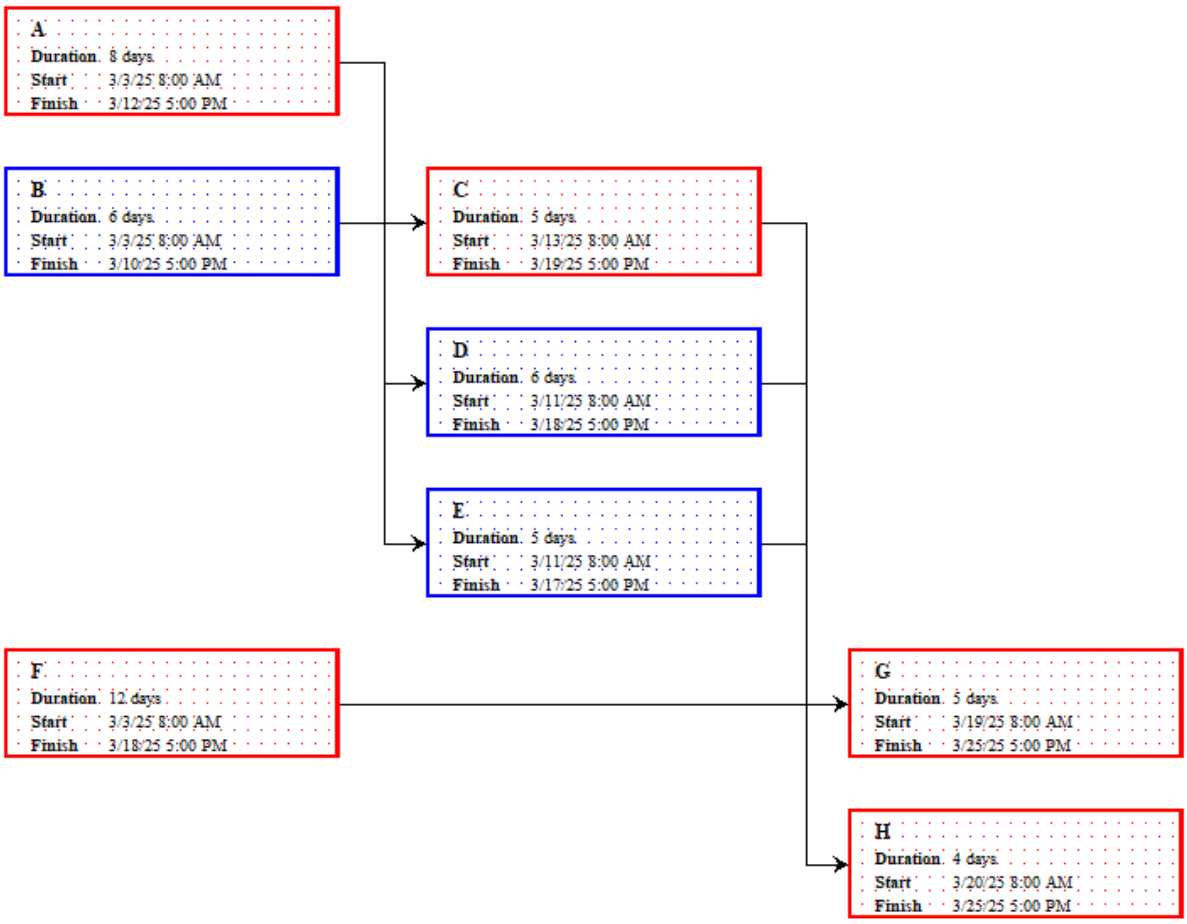
**Gantt Chart**




**Information**



## Network Diagram




## Forward Pass

| | Name | Duration | Predecessors | ES | EF |
|---|---|---|---|---|---|
| 1 | A | 8 days | | 0 | 8 |
| 2 | B | 6 days | | 0 | 6 |
| 3 | C | 5 days | 1 | 8 | 13 |
| 4 | D | 6 days | 2 | 6 | 12 |
| 5 | E | 5 days | 2 | 6 | 11 |
| 6 | F | 12 days | | 0 | 12 |
| 7 | G | 5 days | 5;6 | 12 | 17 |
| 8 | H | 4 days | 3;4 | 13 | 17 |

## Backward Pass

| | Name | Duration | Successors | LF | LS |
|---|---|---|---|---|---|
| A | A | 8 days | 3 | 7 | 1 |
| B | B | 6 days | 4;5 | 7 | 1 |
| C | C | 5 days | 8 | 13 | 7 |
| D | D | 6 days | 8 | 13 | 7 |
| E | E | 5 days | 7 | 12 | 8 |
| F | F | 12 days | 7 | 12 | 0 |
| G | G | 5 days | | 17 | 12 |
| H | H | 4 days | | 17 | 13 |

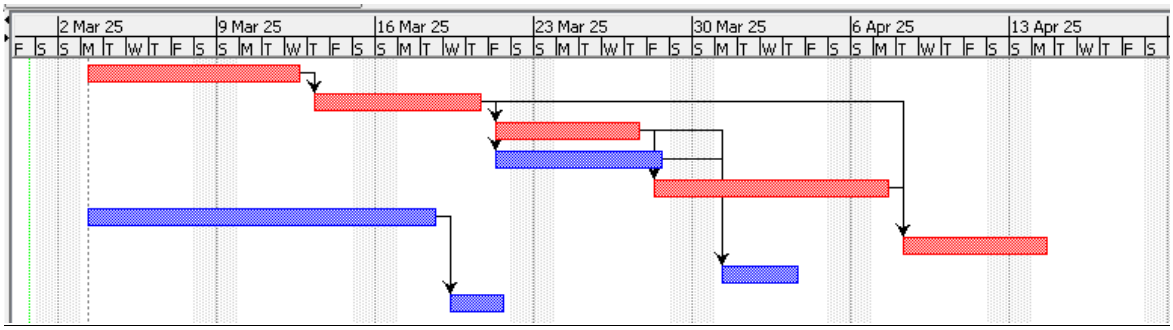
# Question 9

Consider the following table of information:

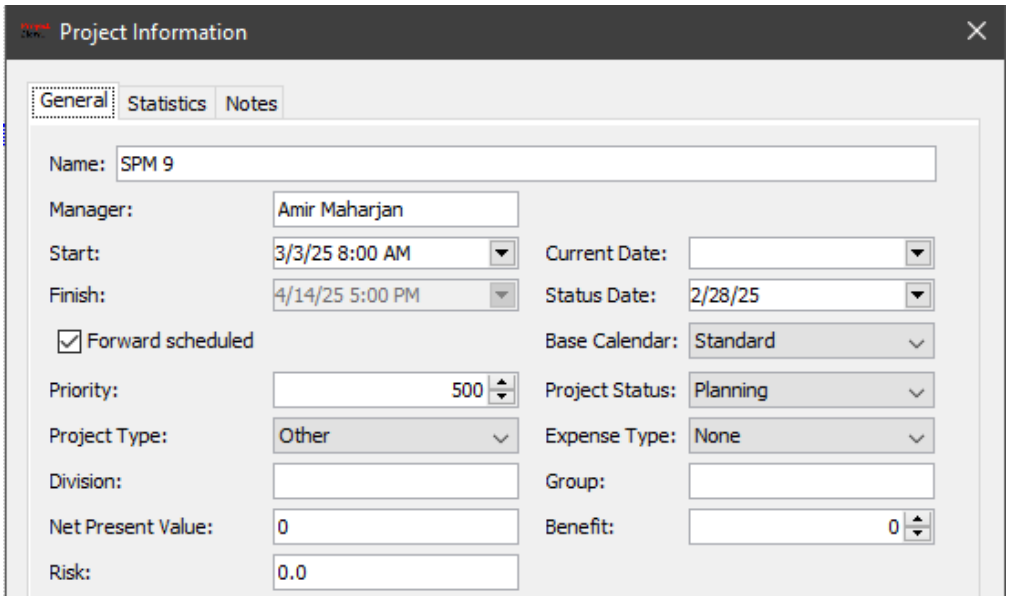
| Activity | Duration(week) | Precedents |
|---|---|---|
| A | 8 | None |
| B | 6 | A |
| C | 5 | B |
| D | 6 | B |
| E | 7 | C |
| F | 12 | None |
| G | 5 | B, E |
| H | 4 | C,D |
| I | 3 | F |

Draw the precedence network diagram and Gantt Chart.

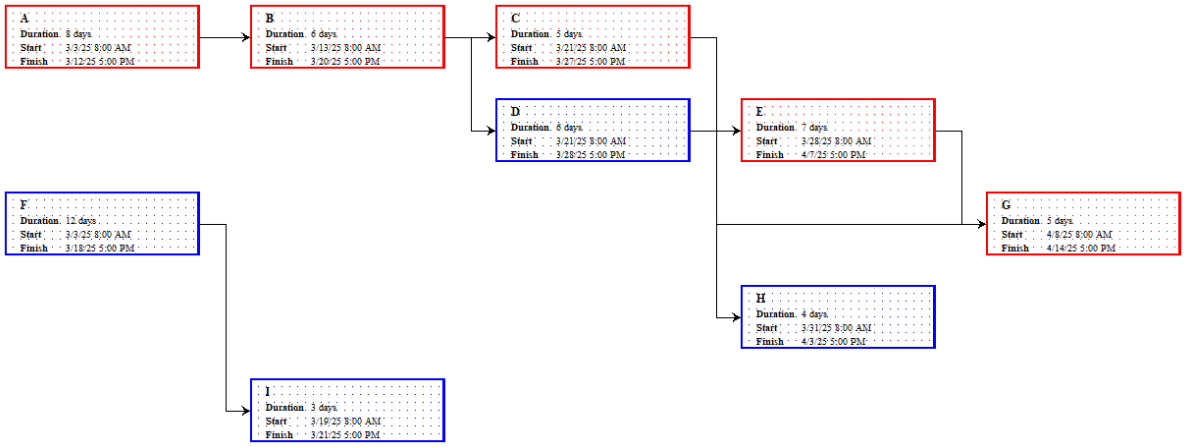
**Gantt Chart**




**Information**



## Network Diagram




## Forward Pass

| | Name | Duration | Predecessors | ES | EF |
|---|---|---|---|---|---|
| 1 | A | 8 days | | 0 | 8 |
| 2 | B | 6 days | 1 | 8 | 14 |
| 3 | C | 5 days | 2 | 14 | 19 |
| 4 | D | 6 days | 2 | 14 | 20 |
| 5 | E | 7 days | 3 | 19 | 26 |
| 6 | F | 12 days | | 0 | 12 |
| 7 | G | 5 days | 2;5 | 26 | 31 |
| 8 | H | 4 days | 3;4 | 20 | 24 |
| 9 | I | 3 days | 6 | 12 | 15 |

## Backward Pass

| | Name | Duration | Successors | LF | LS |
|---|---|---|---|---|---|
| 1 | A | 8 days | 2 | 28 | 20 |
| 2 | B | 6 days | 3;4;7 | 15 | 9 |
| 3 | C | 5 days | 5;8 | 20 | 15 |
| 4 | D | 6 days | 8 | 28 | 22 |
| 5 | E | 7 days | 7 | 27 | 20 |
| 6 | F | 12 days | 9 | 29 | 17 |
| 7 | G | 5 days | | 32 | 27 |
| 8 | H | 4 days | | 32 | 28 |
| 9 | I | 3 days | | 32 | 29 |

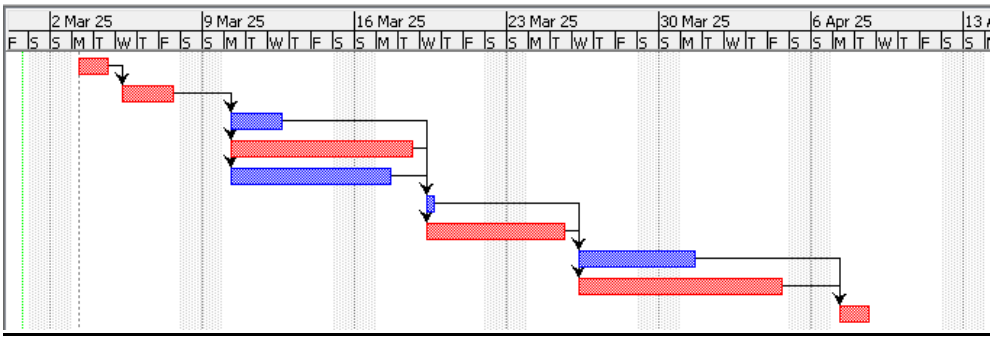
# Question 10

Consider the following table of information:

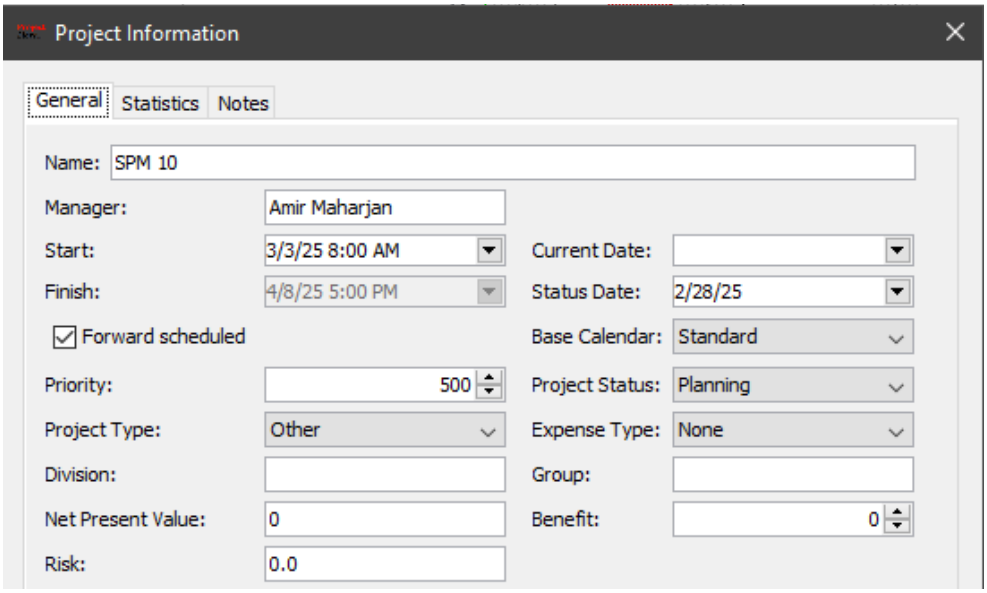
| Activity | Predecessors (Days) | Duration |
|---|---|---|
| 1 | - | 2 |
| 2 | 1 | 3 |
| 3 | 2 | 3 |
| 4 | 2 | 7 |
| 5 | 2 | 6 |
| 6 | 3,4 | 1 |
| 7 | 4,5 | 5 |
| 8 | 6,7 | 4 |
| 9 | 7 | 8 |
| 10 | 8,9 | 2 |

Draw the precedence network diagram and Gantt Chart.

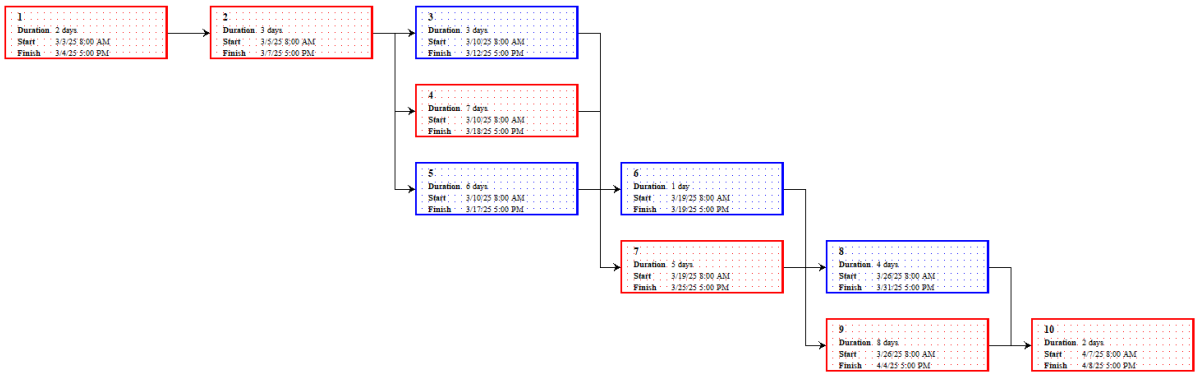
**Gantt Chart**




**Information**



## Network Diagram




## Forward Pass

| | Name | Duration | Predecessors | ES | EF |
|---|---|---|---|---|---|
| 1 | 1 | 2 days | | 0 | 2 |
| 2 | 2 | 3 days | 1 | 2 | 5 |
| 3 | 3 | 3 days | 2 | 5 | 8 |
| 4 | 4 | 7 days | 2 | 5 | 12 |
| 5 | 5 | 6 days | 2 | 5 | 11 |
| 6 | 6 | 1 day | 3;4 | 12 | 13 |
| 7 | 7 | 5 days | 4;5 | 12 | 17 |
| 8 | 8 | 4 days | 6;7 | 17 | 21 |
| 9 | 9 | 8 days | 7 | 17 | 25 |
| 10 | 10 | 2 days | 8;9 | 25 | 27 |

## Backward Pass

| | Name | Duration | Successors | LF | LS |
|---|---|---|---|---|---|
| 1 | 1 | 2 days | 2 | 2 | 0 |
| 2 | 2 | 3 days | 3;4;5 | 5 | 2 |
| 3 | 3 | 3 days | 6 | 20 | 17 |
| 4 | 4 | 7 days | 6;7 | 12 | 5 |
| 5 | 5 | 6 days | 7 | 12 | 6 |
| 6 | 6 | 1 day | 8 | 21 | 20 |
| 7 | 7 | 5 days | 8;9 | 17 | 12 |
| 8 | 8 | 4 days | 10 | 25 | 21 |
| 9 | 9 | 8 days | 10 | 25 | 17 |
| 10 | 10 | 2 days | | 27 | 25 |

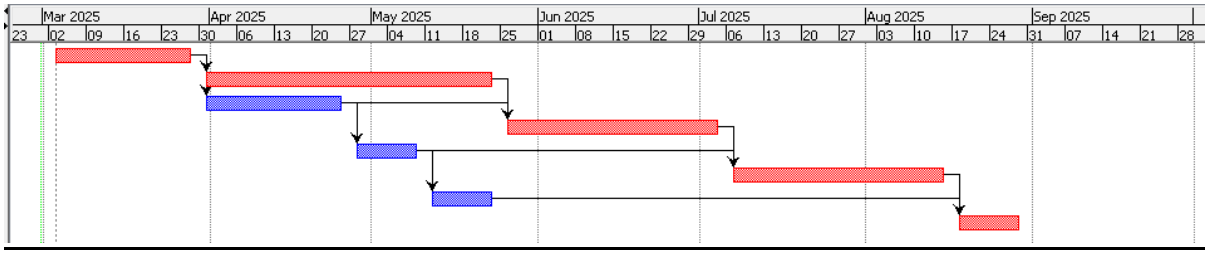
# Question 11

Consider the following table of information:

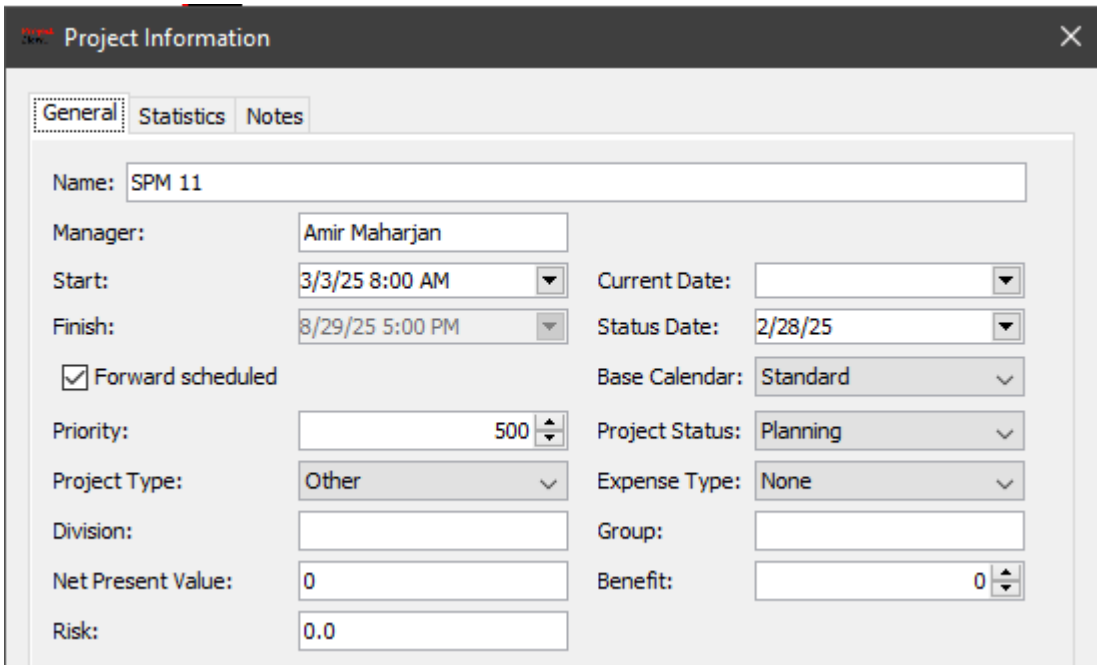
| Task | Precedents | Duration (Days) |
|---|---|---|
| A | | 20 |
| B | A | 40 |
| C | A | 20 |
| D | C, B | 30 |
| E | C | 10 |
| F | D, E | 30 |
| G | E | 10 |
| H | F, G | 10 |

Draw the precedence network diagram and Gantt Chart.

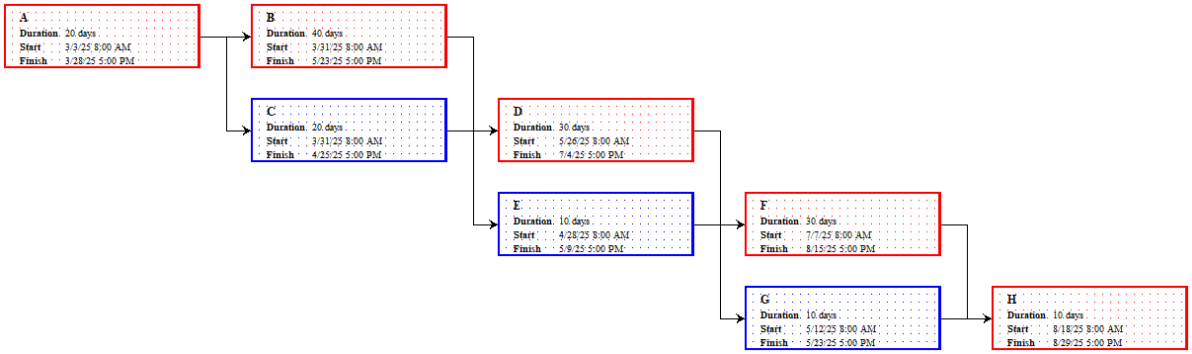
**Gantt Chart**




**Information**



## Network Diagram




## Forward Pass

| | Name | Duration | Predecessors | ES | EF |
|---|---|---|---|---|---|
| 1 | A | 20 days | | 0 | 20 |
| 2 | B | 40 days | 1 | 20 | 60 |
| 3 | C | 20 days | 1 | 20 | 40 |
| 4 | D | 30 days | 2;3 | 60 | 90 |
| 5 | E | 10 days | 3 | 40 | 50 |
| 6 | F | 30 days | 4;5 | 90 | 120 |
| 7 | G | 10 days | 5 | 50 | 60 |
| 8 | H | 10 days | 6;7 | 120 | 130 |

## Backward Pass

| | Name | Duration | Successors | LF | LS |
|---|---|---|---|---|---|
| 1 | A | 20 days | 2;3 | 20 | 0 |
| 2 | B | 40 days | 4 | 60 | 20 |
| 3 | C | 20 days | 4;5 | 60 | 40 |
| 4 | D | 30 days | 6 | 90 | 60 |
| 5 | E | 10 days | 6;7 | 90 | 80 |
| 6 | F | 30 days | 8 | 120 | 90 |
| 7 | G | 10 days | 8 | 120 | 110 |
| 8 | H | 10 days | | 130 | 120 |

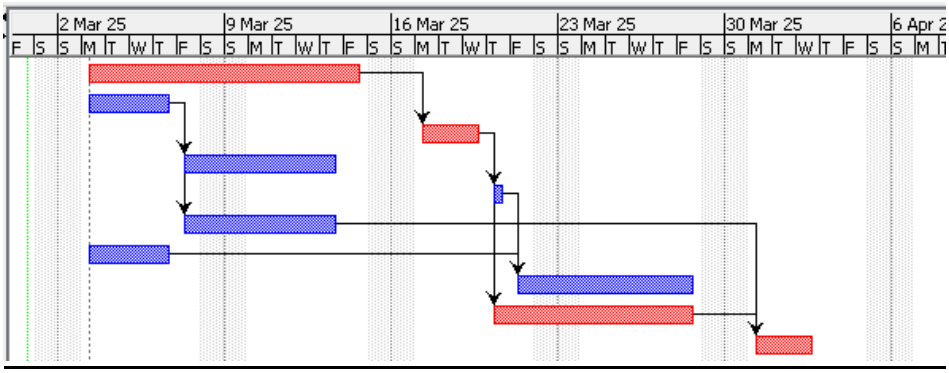
# Question 12

Consider the following table of information:

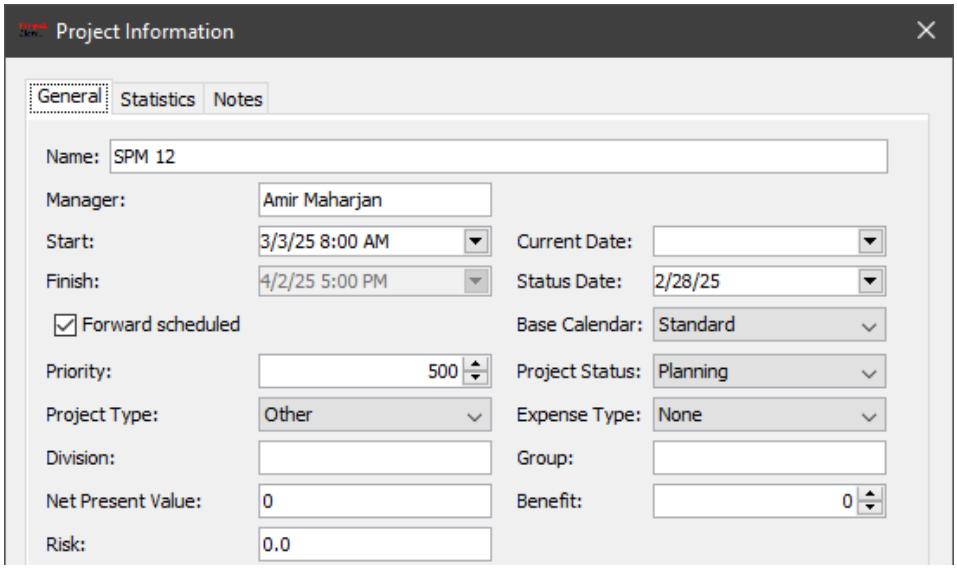
| Activity | Precedence | Duration (months) |
|---|---|---|
| P | None | 10 |
| Q | None | 4 |
| R | P | 3 |
| S | Q | 5 |
| T | R | 1 |
| U | Q | 5 |
| V | None | 4 |
| W | T, V | 6 |
| X | R | 7 |
| Y | X, U | 3 |

Draw the precedence network diagram and Gantt Chart.

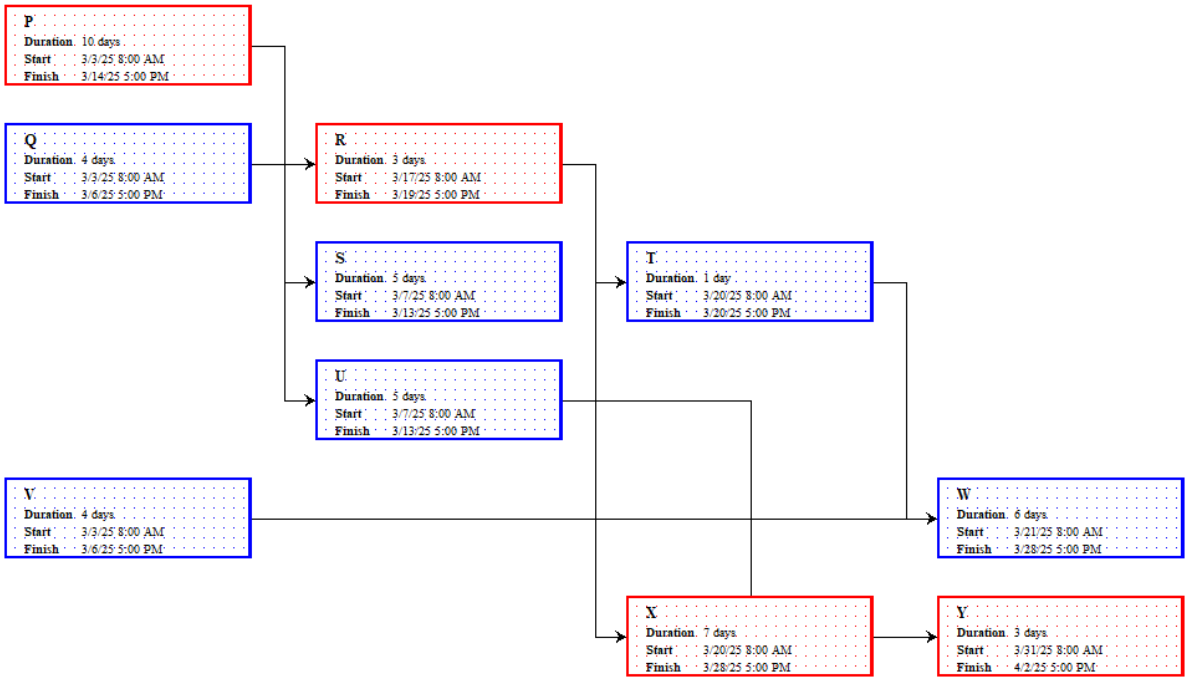
**Gantt Chart**




**Information**



## Network Diagram




## Forward Pass

| | Name | Duration | Predecessors | ES | EF |
|---|---|---|---|---|---|
| 1 | P | 10 days | | 0 | 10 |
| 2 | Q | 4 days | | 0 | 4 |
| 3 | R | 3 days | 1 | 10 | 13 |
| 4 | S | 5 days | 2 | 4 | 9 |
| 5 | T | 1 day | 3 | 13 | 14 |
| 6 | U | 5 days | 2 | 4 | 9 |
| 7 | V | 4 days | | 0 | 4 |
| 8 | W | 6 days | 5;7 | 14 | 20 |
| 9 | X | 7 days | 3 | 13 | 20 |
| 10 | Y | 3 days | 6;9 | 20 | 23 |

## Backward Pass

| | Name | Duration | Successors | LF | LS |
|---|---|---|---|---|---|
| 1 | P | 10 days | 3 | 10 | 0 |
| 2 | Q | 4 days | 4;6 | 15 | 11 |
| 3 | R | 3 days | 5;9 | 13 | 10 |
| 4 | S | 5 days | | 23 | 18 |
| 5 | T | 1 day | 8 | 17 | 16 |
| 6 | U | 5 days | 10 | 20 | 15 |
| 7 | V | 4 days | 8 | 17 | 13 |
| 8 | W | 6 days | | 23 | 17 |
| 9 | X | 7 days | 10 | 20 | 13 |
| 10 | Y | 3 days | | 23 | 20 |