Student ID: 180911

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Course: SWEN Software Project Management

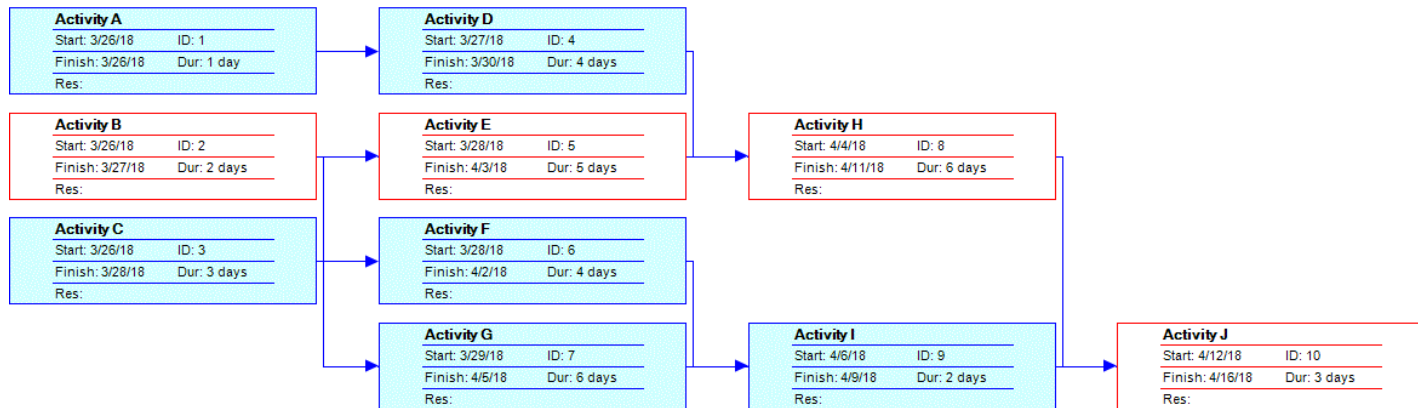Instructor: Professor Thomas Xu Canhuo

Date: 4th November 2019

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Question 1

Network Diagram:

Activity A			Activity D			Activity H		
Start: 3/26/18	ID: 1		Start: 3/27/18	ID: 4		Start: 4/4/18	ID: 8	
Finish: 3/26/18	Dur: 1 day		Finish: 3/30/18	Dur: 4 days		Finish: 4/11/18	Dur: 6 days	
Res:			Res:			Res:		

Activity B			Activity E			Activity F		
Start: 3/26/18	ID: 2		Start: 3/28/18	ID: 5		Start: 3/28/18	ID: 6	
Finish: 3/27/18	Dur: 2 days		Finish: 4/3/18	Dur: 5 days		Finish: 4/2/18	Dur: 4 days	
Res:			Res:			Res:		

| Activity C			Activity G			Activity I			Activity J		
Start: 3/26/18	ID: 3		Start: 3/29/18	ID: 7		Start: 4/6/18	ID: 9		Start: 4/12/18	ID: 10	
Finish: 3/28/18	Dur: 3 days		Finish: 4/5/18	Dur: 6 days		Finish: 4/9/18	Dur: 2 days		Finish: 4/16/18	Dur: 3 days	
Res:			Res:			Res:			Res:		

The network diagram indicates:

- Activity A began on 3/26/18 and lasted for 1 day, it is the predecessor of Activity D.

- Activity B began on 3/26/18 and lasted for 2 days, it is the predecessor of Activities E and F.

- Activity C began on 3/26/18 and lasted for 3 days, it is the predecessor of Activity G.

- Activity D cannot start until Activity A finishes, it lasted for four days, is a predecessor of Activity H.

- Activity E cannot start until Activity B finishes and is a predecessor of Activity H.

- Activity F cannot start until Activity B finishes and is a predecessor of Activity I.

- Activity G cannot start until Activity C finishes and is a predecessor of Activity I.

- Activity H cannot start until Activities D and E finish and is a predecessor of Activity J.

- Activity I cannot start until Activities F and G finish and is a predecessor of Activity J.

- Activity J is the final activity which lasted 3 days.

- The red boxes identify the critical path,

Schedule

	Task Mode	Task Name	Start	Finish	Late Start	Late Finish	Free Slack	Total Slack
1		Activity A	Mon 3/26/18	Mon 3/26/18	Wed 3/28/18	Wed 3/28/18	0 days	2 days
2		Activity B	Mon 3/26/18	Tue 3/27/18	Mon 3/26/18	Tue 3/27/18	0 days	0 days
3		Activity C	Mon 3/26/18	Wed 3/28/18	Wed 3/28/18	Fri 3/30/18	0 days	2 days
4		Activity D	Tue 3/27/18	Fri 3/30/18	Thu 3/29/18	Tue 4/3/18	2 days	2 days
5		Activity E	Wed 3/28/18	Tue 4/3/18	Wed 3/28/18	Tue 4/3/18	0 days	0 days
6		Activity F	Wed 3/28/18	Mon 4/2/18	Fri 4/6/18	Wed 4/11/18	7 days	7 days
7		Activity G	Thu 3/29/18	Thu 4/5/18	Mon 4/2/18	Mon 4/9/18	0 days	2 days
8		Activity H	Wed 4/4/18	Wed 4/11/18	Wed 4/4/18	Wed 4/11/18	0 days	0 days
9		Activity I	Fri 4/6/18	Mon 4/9/18	Tue 4/10/18	Wed 4/11/18	2 days	2 days
10		Activity J	Thu 4/12/18	Mon 4/16/18	Thu 4/12/18	Mon 4/16/18	0 days	0 days

Question 2
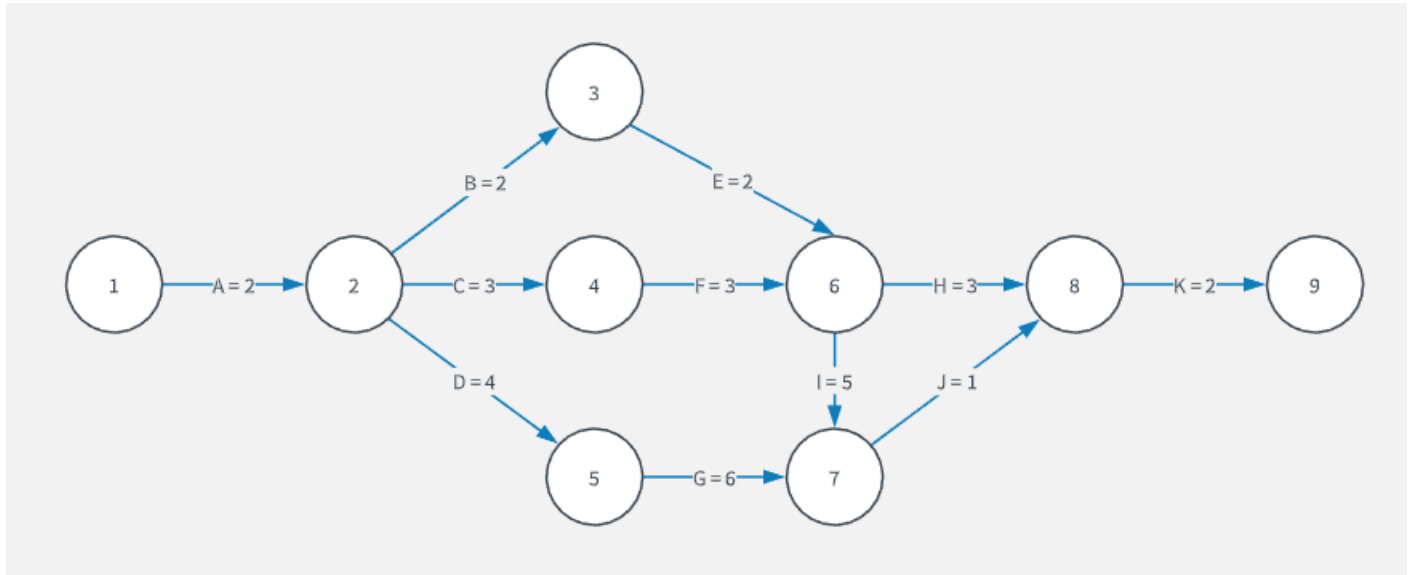
Assume all durations are in days.

Path 1:   A-B-E-H-K $2 + 2 + 2 + 2 + 2 = 10$ days

Path 2:   A-B-I-J-K $2 + 2 + 2 + 5 + 1 + 2 = 14$ days
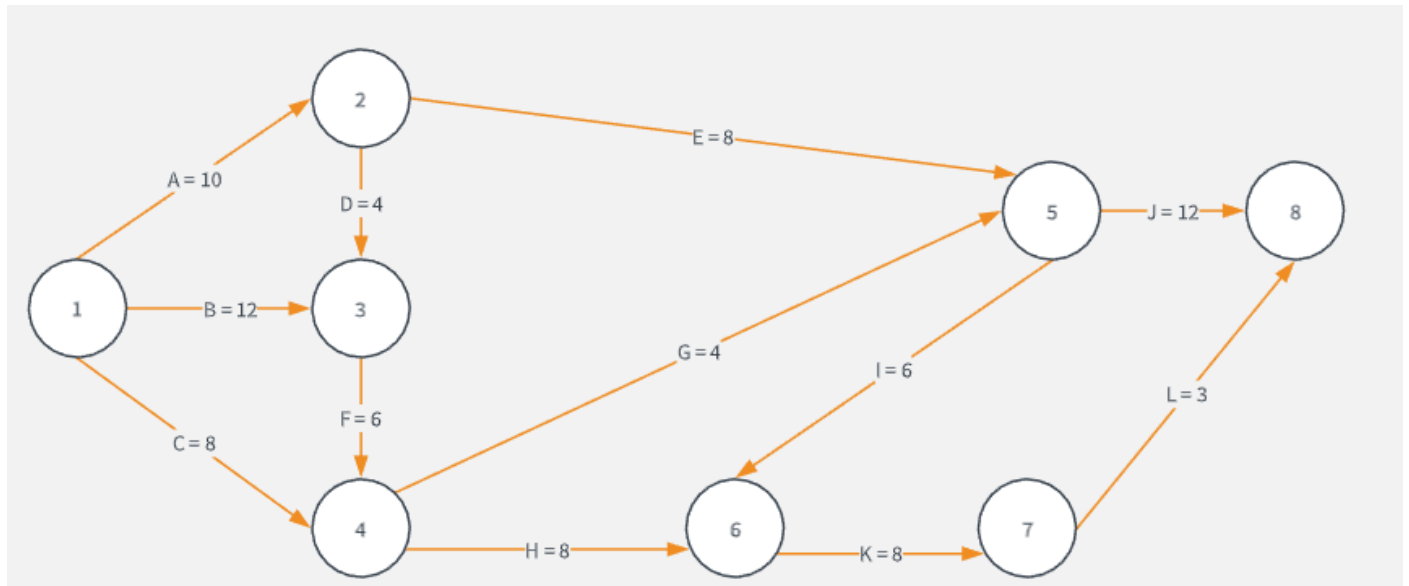
Path 2:   A-C-F-H-K $2 + 3 + 3 + 2 + 2 = 12$ days

Path 3:   A-C-F-I-J-K $2 + 3 + 3 + 5 + 1 + 2 = 16$ days (Critical Path)

Path 4:   A-D-G-J-K $2 + 4 + 6 + 1 + 2 = 15$ days

The shortest possible time to complete this project is 16 days, the critical path.

Assume all durations are in days.

Path 1:	A-E-J	$10 + 8 + 12 = 30$ days
Path 2:	A-D-F-G-J	$10 + 4 + 6 + 4 + 12 = 36$ days
Path 3:	**A-D-F-G-I-K-L**	**$10 + 4 + 6 + 4 + 6 + 8 + 3 = 41$ days (Critical Path)**
Path 4:	A-D-F-H-K-L	$10 + 4 + 6 + 8 + 8 + 3 = 39$ days
Path 7:	B-F-G-J	$12 + 6 + 4 + 12 = 34$ days
Path 8:	B-F-G-I-K-L	$12 + 6 + 4 + 6 + 8 + 3 = 39$ days
Path 9:	B-F-H-K-L	$12 + 6 + 8 + 8 + 3 = 37$ days
Path 10:	C-G-J	$8 + 4 + 12 = 24$ days
Path 11:	C-G-I-K-L	$8 + 4 + 6 + 8 + 3 = 29$ days
Path 12:	C-H-K-L	$8 + 8 + 8 + 3 = 27$ days

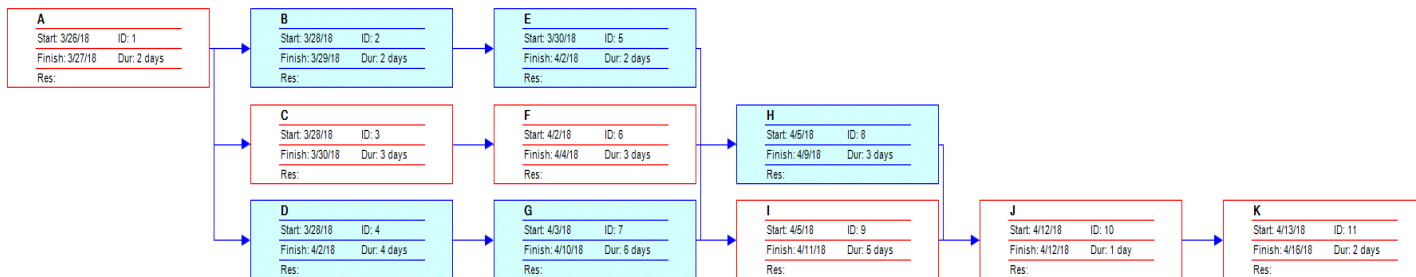The shortest possible time to complete this project is 41 days, the critical path.

Question 4

Gantt Chart
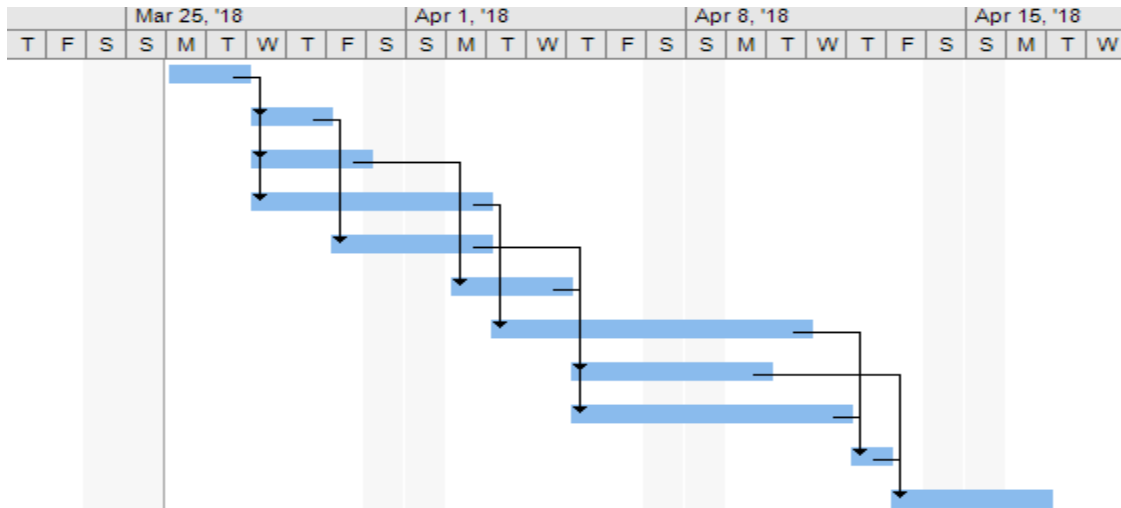
- The blue bars illustrate the length of each task.
- The arrows show the relationships between the tasks, in this case they connect the activities to the predecessor(s).

Network Diagram

A			B			E		
Start: 3/26/18	ID: 1		Start: 3/28/18	ID: 2		Start: 3/30/18	ID: 5	
Finish: 3/27/18	Dur: 2 days		Finish: 3/29/18	Dur: 2 days		Finish: 4/2/18	Dur: 2 days	
Res:			Res:			Res:		

C			F			H		
Start: 3/28/18	ID: 3		Start: 4/2/18	ID: 6		Start: 4/5/18	ID: 8	
Finish: 3/30/18	Dur: 3 days		Finish: 4/4/18	Dur: 3 days		Finish: 4/9/18	Dur: 3 days	
Res:			Res:			Res:		

D			G			I			J			K		
Start: 3/28/18	ID: 4		Start: 4/3/18	ID: 7		Start: 4/5/18	ID: 9		Start: 4/12/18	ID: 10		Start: 4/13/18	ID: 11	
Finish: 4/2/18	Dur: 4 days		Finish: 4/10/18	Dur: 6 days		Finish: 4/11/18	Dur: 5 days		Finish: 4/12/18	Dur: 1 day		Finish: 4/16/18	Dur: 2 days	
Res:			Res:			Res:			Res:			Res:		

- The arrows connect the tasks to their predecessors and show the project flow.
- All of the tasks dependencies in this project are start to finish.
- The red activities identify the critical path, which is the longest but is the important, as it identifies the shortest time to complete the project. This shortest time to complete this project is 16 days

Task Schedule Table

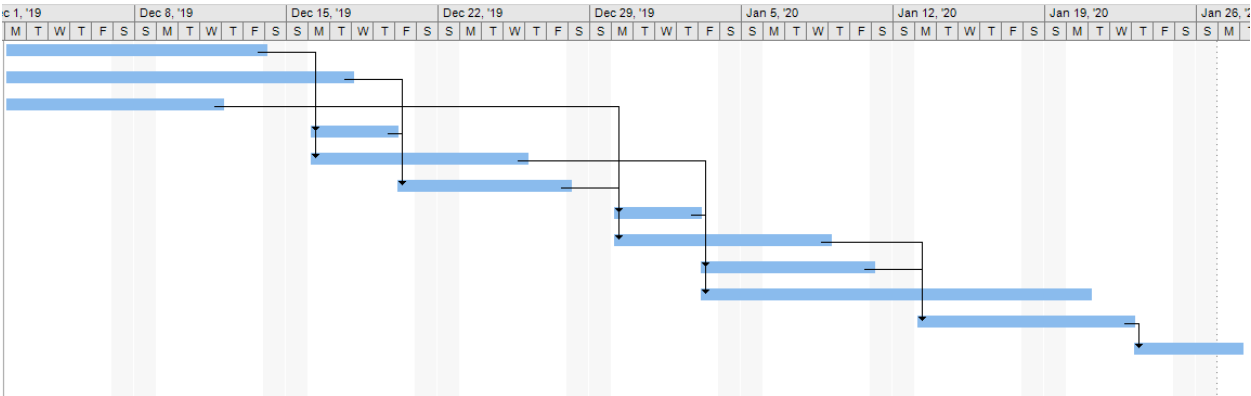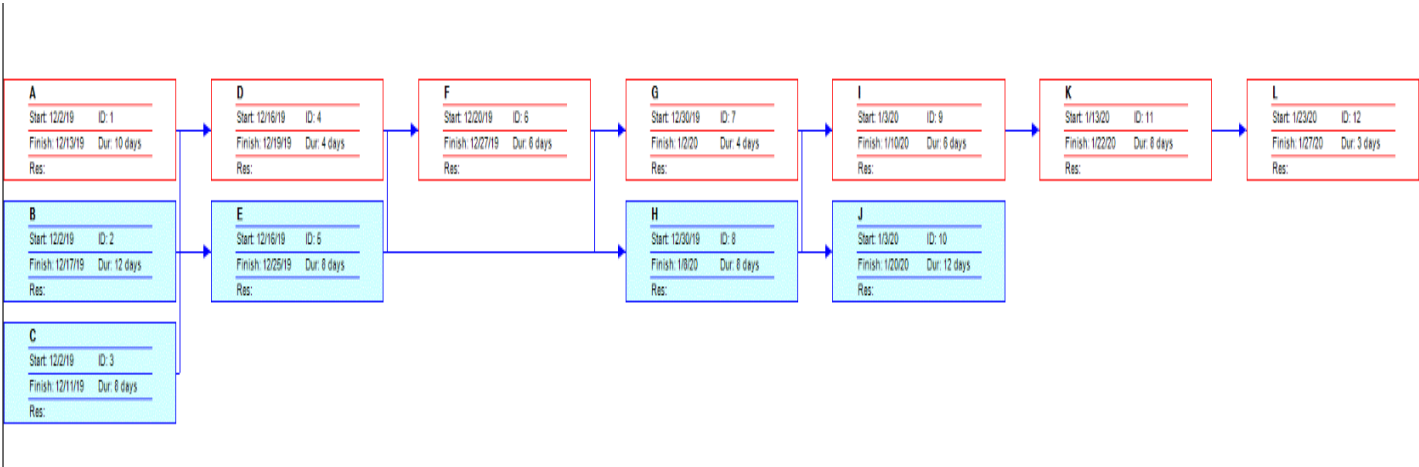|	Task Mode	Task Name	Start	Finish	Late Start	Late Finish	Free Slack	Total Slack
1	⇥	A	Mon 3/26/18	Tue 3/27/18	Mon 3/26/18	Tue 3/27/18	0 days	0 days
2	⇥	B	Wed 3/28/18	Thu 3/29/18	Fri 3/30/18	Mon 4/2/18	0 days	2 days
3	⇥	C	Wed 3/28/18	Fri 3/30/18	Wed 3/28/18	Fri 3/30/18	0 days	0 days
4	⇥	D	Wed 3/28/18	Mon 4/2/18	Thu 3/29/18	Tue 4/3/18	0 days	1 day
5	⇥	E	Fri 3/30/18	Mon 4/2/18	Tue 4/3/18	Wed 4/4/18	2 days	2 days
6	⇥	F	Mon 4/2/18	Wed 4/4/18	Mon 4/2/18	Wed 4/4/18	0 days	0 days
7	⇥	G	Tue 4/3/18	Tue 4/10/18	Wed 4/4/18	Wed 4/11/18	1 day	1 day
8	⇥	H	Thu 4/5/18	Mon 4/9/18	Tue 4/10/18	Thu 4/12/18	3 days	3 days
9	⇥	I	Thu 4/5/18	Wed 4/11/18	Thu 4/5/18	Wed 4/11/18	0 days	0 days
10	⇥	J	Thu 4/12/18	Thu 4/12/18	Thu 4/12/18	Thu 4/12/18	0 days	0 days
11	⇥	K	Fri 4/13/18	Mon 4/16/18	Fri 4/13/18	Mon 4/16/18	0 days	0 days

- This table displays the entire schedule for the project, included the projected start and finish dates as well as the late start and late finish dates.
- The late start is the latest possible time an activity can be started without causing the project to delay.
- The late finish is the latest possible date an activity or task can be completed, if the time taken to complete the project goes over that date the project final date will be delayed.

Question 5

Gantt Chart

Network Diagram

Task Schedule Diagram

	Task Mode	Task Name	Start	Finish	Late Start	Late Finish	Free Slack	Total Slack
1		A	Mon 12/2/19	Fri 12/13/19	Mon 12/2/19	Fri 12/13/19	0 days	0 days
2		B	Mon 12/2/19	Tue 12/17/19	Wed 12/4/19	Thu 12/19/19	2 days	2 days
3		C	Mon 12/2/19	Wed 12/11/19	Wed 12/18/19	Fri 12/27/19	12 days	12 days
4		D	Mon 12/16/19	Thu 12/19/19	Mon 12/16/19	Thu 12/19/19	0 days	0 days
5		E	Mon 12/16/19	Wed 12/25/19	Tue 12/24/19	Thu 1/2/20	6 days	6 days
6		F	Fri 12/20/19	Fri 12/27/19	Fri 12/20/19	Fri 12/27/19	0 days	0 days
7		G	Mon 12/30/19	Thu 1/2/20	Mon 12/30/19	Thu 1/2/20	0 days	0 days
8		H	Mon 12/30/19	Wed 1/8/20	Wed 1/1/20	Fri 1/10/20	2 days	2 days
9		I	Fri 1/3/20	Fri 1/10/20	Fri 1/3/20	Fri 1/10/20	0 days	0 days
10		J	Fri 1/3/20	Mon 1/20/20	Fri 1/10/20	Mon 1/27/20	5 days	5 days
11		K	Mon 1/13/20	Wed 1/22/20	Mon 1/13/20	Wed 1/22/20	0 days	0 days
12		L	Thu 1/23/20	Mon 1/27/20	Thu 1/23/20	Mon 1/27/20	0 days	0 days