

MGMT-3453-X20: Homework 8-9

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Problem 8

```
tribble(
  ~"act", ~"NODES", ~"a", ~"m", ~"b",

  "A", "1-2", "2", "3", "4",
  "B", "2-3", "1", "2", "3",
  "C", "2-4", "4", "5", "12",
  "D", "2-5", "3", "4", "11",
  "E", "3-6", "1", "3", "5",
  "F", "4-6", "1", "2", "3",
  "G", "5-8", "1", "8", "9",
  "H", "6-7", "2", "4", "6",
  "I", "7-9", "2", "4", "12",
  "J", "8-9", "3", "4", "5",
  "K", "9-10", "5", "7", "8"
) %>%
mutate_at(c('a', 'm', 'b'), readr::parse_number) %>%
left_join(
  tibble::tribble(
    ~"NODES", ~"te", ~"EF", ~"LF", ~"SLACK", ~"CP",
    '1-2',      3,      3,  3,  0,    '*',
    '2-3',      2,      5,  8,  3,    NA,
    '2-4',      6,      9,  9,  0,    '*',
    '2-5',      5,      8,  9,  1,    NA,
    '3-6',      3,      8, 11,  3,    NA,
    '4-6',      2,     11, 11,  0,    '*',
    '5-8',      7,     15, 16,  1,    NA,
    '6-7',      4,     15, 15,  0,    '*',
    '7-9',      5,     20, 20,  0,    '*',
    '8-9',      4,     19, 20,  1,    NA,
    '9-10', 6.83, 26.83, 26.83, 0,    '*'
  )
) %>%
knitr::kable()
```

```
## Joining, by = "NODES"
```

act	NODES	a	m	b	te	EF	LF	SLACK	CP
A	1-2	2	3	4	3.00	3.00	3.00	0	*

act	NODES	a	m	b	te	EF	LF	SLACK	CP
B	2-3	1	2	3	2.00	5.00	8.00	3	NA
C	2-4	4	5	12	6.00	9.00	9.00	0	*
D	2-5	3	4	11	5.00	8.00	9.00	1	NA
E	3-6	1	3	5	3.00	8.00	11.00	3	NA
F	4-6	1	2	3	2.00	11.00	11.00	0	*
G	5-8	1	8	9	7.00	15.00	16.00	1	NA
H	6-7	2	4	6	4.00	15.00	15.00	0	*
I	7-9	2	4	12	5.00	20.00	20.00	0	*
J	8-9	3	4	5	4.00	19.00	20.00	1	NA
K	9-10	5	7	8	6.83	26.83	26.83	0	*

Critical Path: 1-2 >> 2-4 >> 4-6 >> 6-7 >> 7-9 >> 9-10

Expected Completion: 26.83

Problem 9

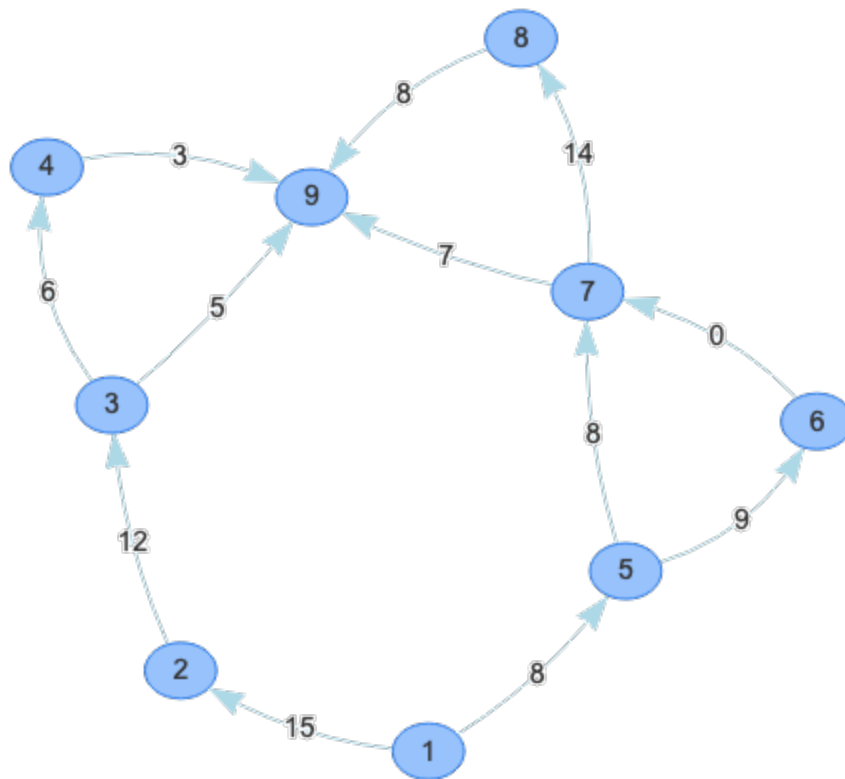
```

library(visNetwork)

list(
  nodes = tibble(
    id = 1:9,
    label = id,
    shape = 'ellipse'
  ),
  edges = dplyr::bind_rows(
    tribble(
~"act", ~"from",~"to", ~"label",
  "A","1","2","15",
  "B","2","3","12",
  "C","3","4","6",
  "D","3","9","5",
  "E","4","9","3",
  "F","1","5","8",
  "G","5","7","8",
  "H","5","6","9"),
    tribble(
      ~"act", ~"from",~"to", ~"label",
      'I(dummy)', '6', '7', '0',
      'J(was I)', '7', '8', '14',
      'K(was J)', '7', '9', '7',
      'L(was K)', '8', '9', '8'
    )
  )
) %>%
{
  visNetwork(
    nodes = .[[1]], edges = .[[2]],
    main = 'PERT')
} %>%
visEdges(
  arrows = list(to = list(enabled = TRUE, scaleFactor = 1)),
  color = list(color = "lightblue", highlight = "red"))

```

PERT



Expected Completion: 39

Critical Path: 1-5 >> 5-6 >> 6-7 >> 7-8 >> 8-9