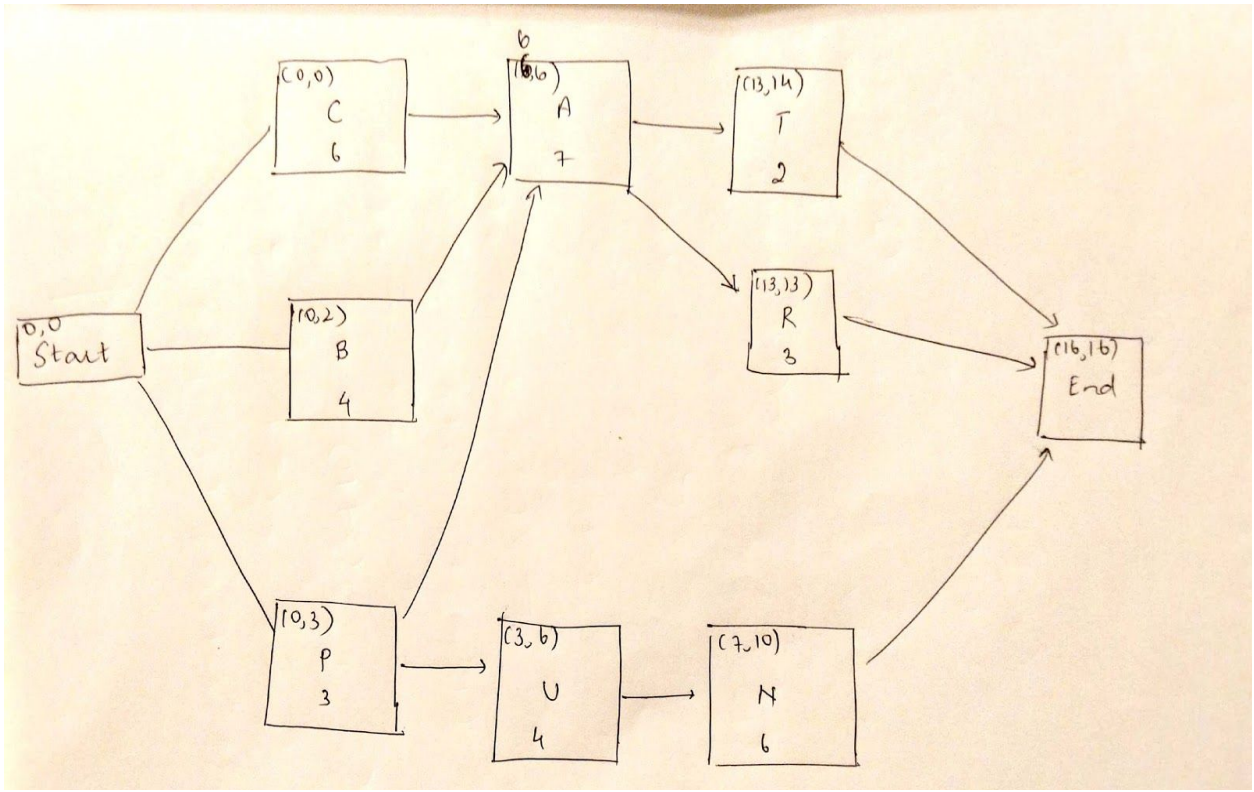
ASSIGNMENT - 4

Q2)



c) Critical path -
Start - C - A - R - End
Total duration - 16 days

d)If activity P takes 2 days longer, then the duration taken by that path will be 15 days which is less than the max duration which is 16 days. Hence, there will be no impact.

If R takes a day longer, the max duration will increase by 1 day to 17 days as R falls in the critical path.

Q3)

4) FOPL

1) Player(Jessica) ∧ Player(Hannah) ∧ Player(Sarah) ∧ Player(Sally)

2) Captain(Christina)

3) ∀x captain(x) → player(x)

4) ∀x player(x) ∧ ∀y captain(y) → friend(x,y) ∨ hater(x,y)

5) ∃x player(x) ∧ ∃y player(y) ∧ criticizes(x,y) → ¬ friend(x,y)

6) ∃x player(x) ∧ ∃y player(y) ∧ criticizes(x,y) → ¬ criticizes(y,x)

7) criticizes(Jessica, Christina)

8) criticizes(Christina, Hannah) ∧ criticizes(Christina, Sarah)

CNF

1a) Player(Jessica)
b) Player(Sarah)
c) player(Hannah)
d) Player(Sally)

2) Captain(Christina)

3) ∃x ¬ captain(x) ∨ player(x)
¬ captain(x) ∨ player(x)

4) ∃x ¬ player(x) ∨ ∃y ¬ captain(y) ∨ friend(x,y) ∨ hater(x,y)
→ ¬ player(x) ∨ ¬ captain(y) ∨ friend(x,y) ∨ hater

5) $\forall x \neg player(x) \vee \forall y \neg player(y) \vee$
$\neg criticizes(x,y) \rightarrow \neg friend(x,y)$

$\neg player(x) \vee \neg player(y) \vee \neg criticizes(x,y)$
$\vee \neg friend(x,y)$

6) $\forall x \neg player(x) \vee \forall y \neg player(y) \vee \neg criticizes(x,y)$
$\vee criticizes(y,x)$

$\neg player(x) \vee \neg player(y) \vee \neg criticizes(x,y)$
$\vee criticizes(y,x)$

7) criticizes (Jessica, Christina)

8 a) criticizes (Christina, Hannah)

b) criticizes (Christina, Sarah)

Resolution

? $\neg hate(Jessica, Christina)$

9) $\neg player(Jessica) \vee \neg captain(Christina) \vee$
$friend(Jessica, Christina)$ (? + 4) {Jessica/x, Christina/y}

10) $\neg player(Jessica) \vee \neg player(Christina) \vee$
$\neg captain(Christina) \vee \neg criticizes(Jessica, Christina)$

(9+5) {Jessica/x, Christina/y}

11) $\neg player(Jessica) \vee \neg captain(Christina) \vee$
$\neg criticizes(Jessica, Christina)$

(10+3) {Jessica/x, Christina/y}

12) $\neg player(Jessica) \vee \neg criticizes(Jessica, Christina)$

(11+2) {Jessica/x, Christina/y}

13) ¬ player(Jessica) (12+7) {Jessica/x, Cheating_y}

14) ¬ player(Jessica) ∨ player(Jessica) (13+1) {Jessica/x}

∴ ∅

Proved