Operating Systems Assignment - 1 (Jayakrishna Sahit 16110104)

All files are present in the following (including pcitures and plots) Gist

1. The user I created and it's preview - pic1.png
2. the C code for the following program is the fork.c program
    2. capturing the pids can be done by using the watch command. The gif made is . since we are killing the child processes so that we don't create a fork bomb, we only see a few processes at a time, howvever we can see that the PID are changing (in fact increasing) which represent the child processes - g1.gif
    3. This can be done using the ctrl-C command
    4. This can be done by keeping a condition for the loop.
    5. this is in the picture - pic2.png
3. The file for this is the bmi.c file while the fork file is bmi_fork.c
    1. A child process can access the command lines arguments because when fork is called, an exact copy of the present program in a new address space, however memory is shared among them, which technically meams the child process should have access to sys arguments.
4. 1. the graphs for this are - LJF.png and SJF.png
    2. For this we have the following -
        1. Case1

```
RT = 40/3+t
```

```
TT = 100/3+t
```

        2. Case2

```
RT = (40+4t)/3
```

```
TT = 110/3+2t
```

3. First we find the RT and the TT.

Case1 - n < 10

```
RT = (0 + (t+n)+ (2t + 2n))/3
   = t+n = 5 + n
```

```
TT = (((2t+2n+30+(10−n)∗2(10/n−1)(n+t))) + ((2t+2n+30+(10−
n)∗2(10/n−1)(n+t)+(20−n−(10−n)∗2(10/n−1)(n+t))) + (2t+2n+30)))/3
```

substituting the values of alpha, beta, tou. we get our equation as

```
SKT = 10(5+n)^2 + 5(2n+160/3) = 10n^2 + 110n + 250+800/3
```

the projected graph is - pic3.png

Case2 - 10 < n < 20

```
RT = (0+10+30−n+3t)/3
   = t+20/3−n/3
```

```
TT = (10+(10+t+20+t+30+t)+(10+t+20−n+t+30))/3
   = 5t/3 + n/3 + 90/3
```

substituting the values of alpha, beta, tou. we get our equation as

```
SKT = 10(35/3+n/3)^2 + 5(115/3+n/3)
```

the projected graph is - pic4.png

Case3 - 20 < n < 30

```
RT = 40/3+t
```

```
TT = 100/3+t
```

substituting the values of alpha, beta, tou. we get our equation as

```
SKT = 10(55/3)^2 + 5(115/3)
```

the projected graph is - pic5.png

4. The Completely Fair Scheduler (CFS)