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CS342 Homework #2

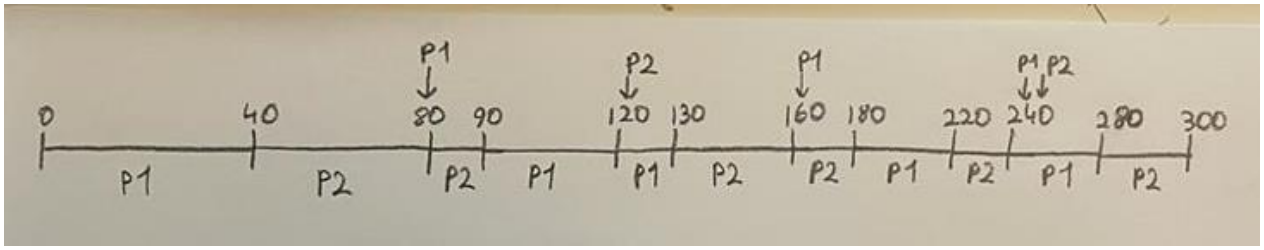
1) Since there are 5 fork methods and 1 main method, 5 child processes will be created. Therefore, 5 processes (excluding main process) will be created.

2) According to Amdahl's Law,

   $4 <= 1 / (S + ((1-S) / 8))$
   $4 <= 8/7S+1$
   $S <=1/7$
   $x <= 1 / (1/7 + ((6/7) / 16))$
   $x <= 112/22$
   $x = 5$

3) Firstly, child process is created but parent will wait after its process is finished. However, the sequence of the child processes is unknown, so the output is dependent on the OS. In my computer, the result is 10 20 50 30 50.

4)



5)

a.

	Finish Time	Turnaround Time	Waiting Time
A	100	100	0
B	180	165	85
C	240	210	150
D	300	265	205
E	350	305	255

b.

	Finish Time	Turnaround Time	Waiting Time
A	100	100	0
B	350	335	255
C	210	180	120
D	270	235	175
E	150	105	55

c.

	Finish Time	Turnaround Time	Waiting Time
A	350	350	250
B	265	250	170
C	90	60	0
D	200	165	105
E	140	95	45

d.

	Finish Time	Turnaround Time	Waiting Time
A	350	350	250
B	320	305	225
C	280	250	190
D	300	265	205
E	330	285	235

e.

	Finish Time	Turnaround Time	Waiting Time
A	350	350	250
B	155	140	60
C	265	245	185
D	135	100	40
E	245	200	150

6) By using Exponential Averaging formula,
Predicted value for process A = 22.1728 and
Predicted value for process B = 15.248.
B is selected next to use the CPU since its predicted value is less than the predicted value of process A.

7) Firstly, the thread is created, and it starts to work with main process concurrently. Then, with the join method, main process waits for thread. Therefore, the first output will be the inside of the thread and the second will be inside of the main process.
The output:
1000 2200 300
100 2200 300