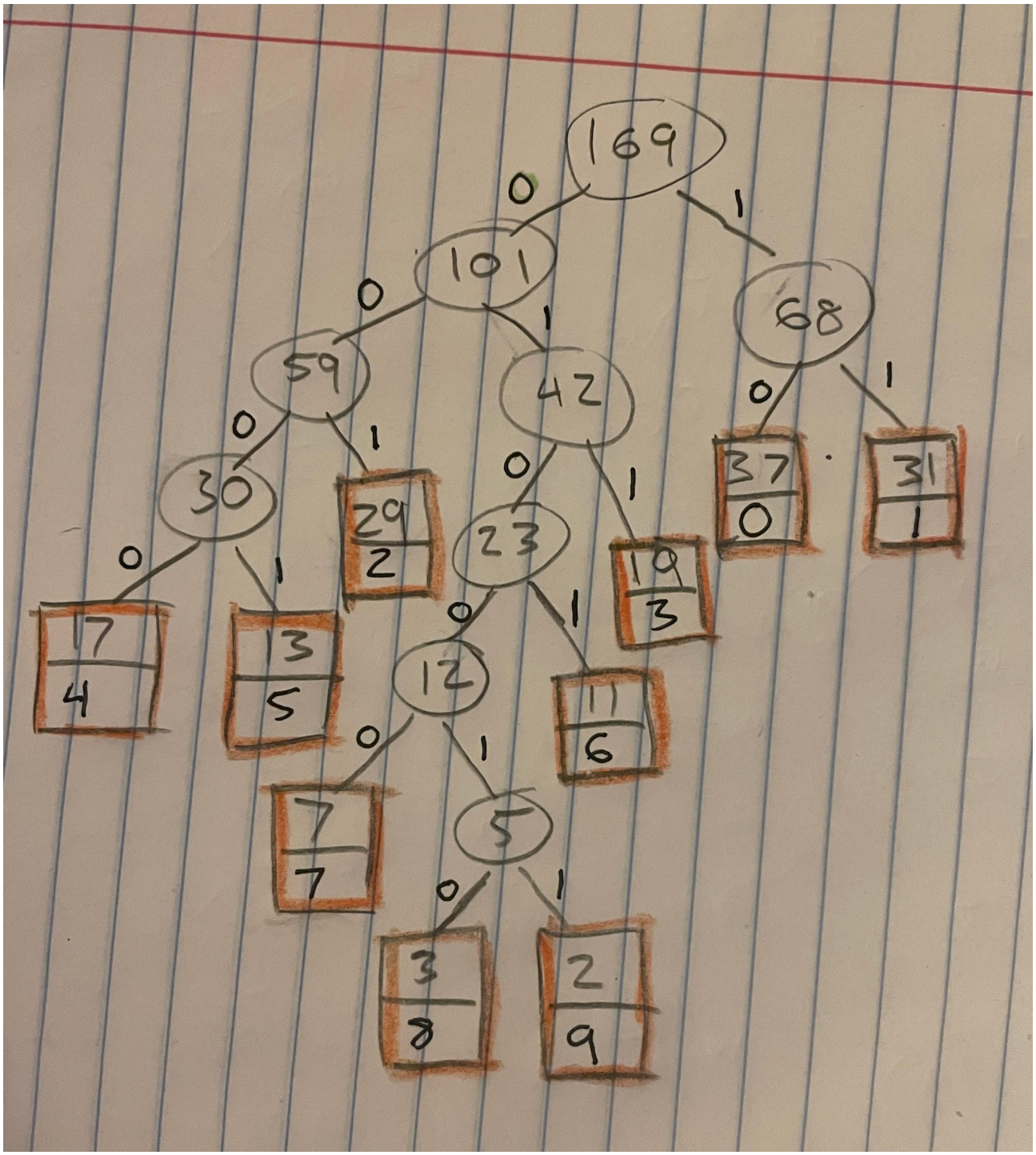
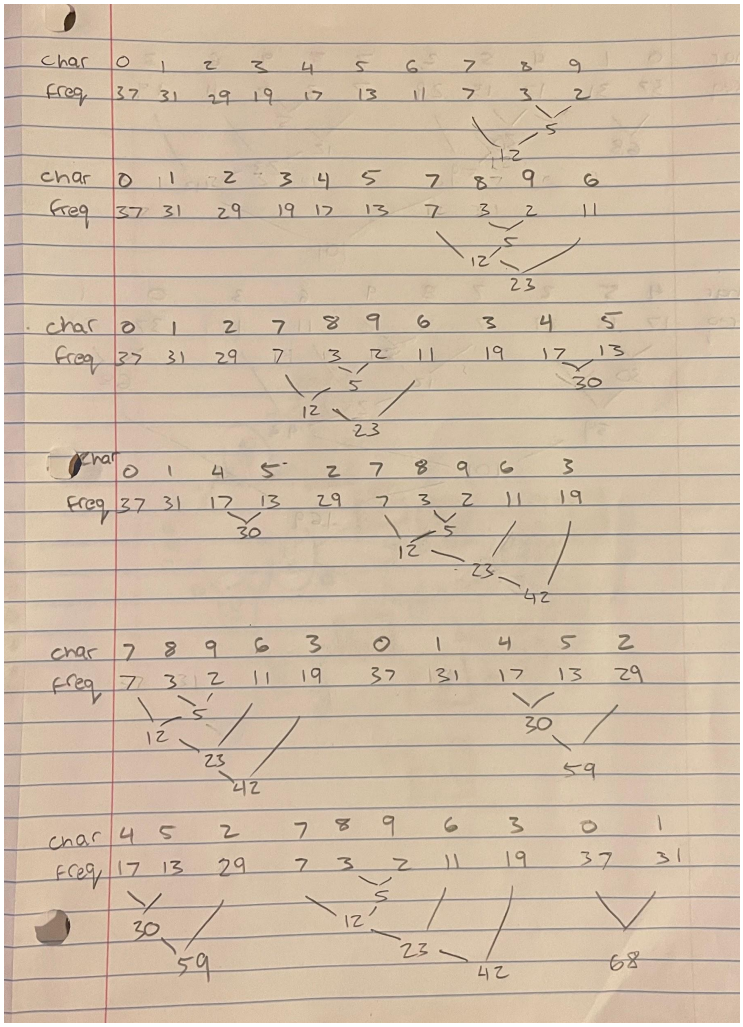
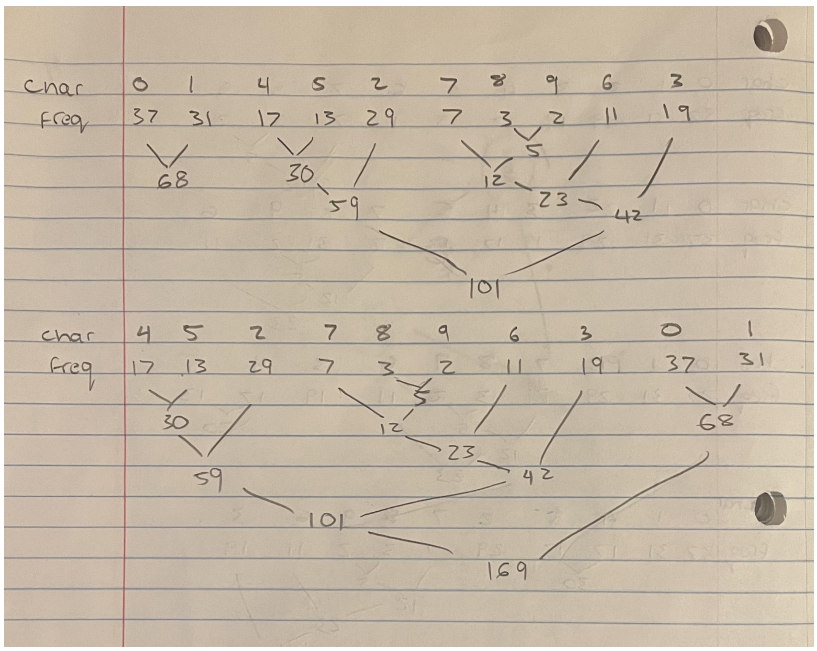
1)
(a) Tree:



* Highlighted orange squares are the leaves. Char at the top and frequency at the bottom. Circles numbers are the internal nodes with total frequency of subtrees. Lower weight subtrees are on the right. Left branch is 0 and the right is 1.

Huffman Steps to achieve tree:





(b)

char	0	1	2	3	4	5	6	7	8	9
freq	10	11	001	011	0000	0001	0101	01000	010010	010011

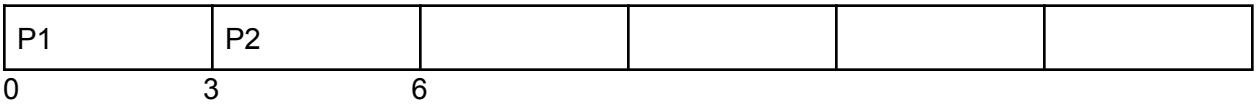
2)
(a)

i. Shortest Job First

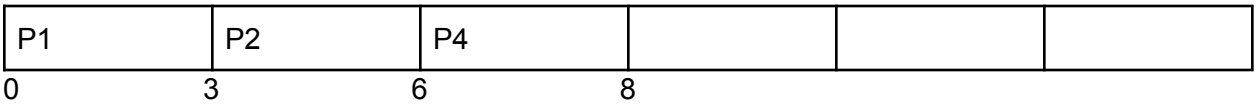
Queue: P1 P2
Execution:

Queue: P2 P3
Execution:

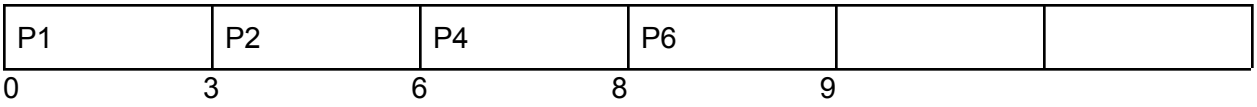
Queue: P4 P3
Execution:



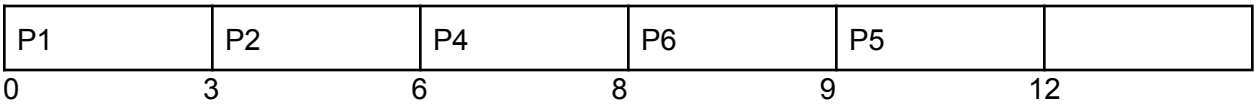
Queue: P6 P5 P3
Execution:



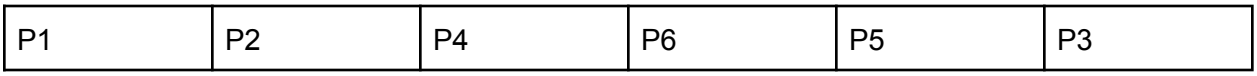
Queue: P5 P3
Execution:



Queue: P3
Execution:



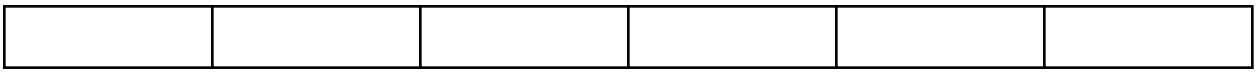
Queue:
Execution:



0 3 6 8 9 12 16

ii. Nonpreemptive Priority:

Queue: P1 P2
Execution:

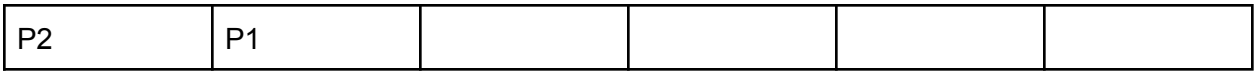


0

Queue: P1 P3
Execution:

0 3

Queue: P3 P4
Execution:

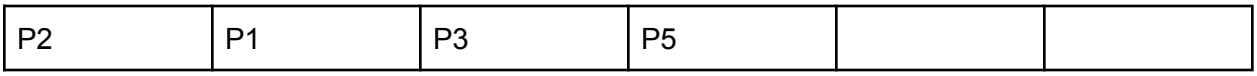


0 3 6

Queue: P5 P6 P4
Execution:

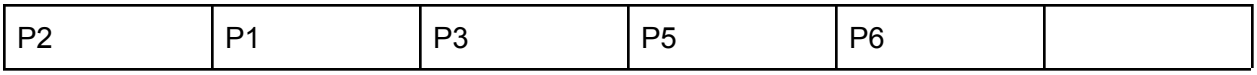
0 3 6 10

Queue: P6 P4
Execution:



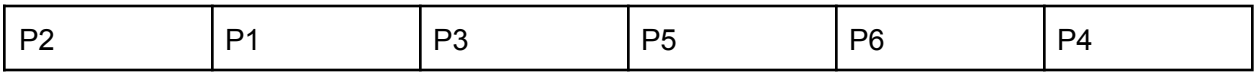
0 3 6 10 13

Queue: P4
Execution:



0 3 6 10 13 14

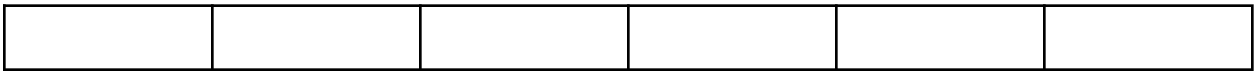
Queue:
Execution:



0 3 6 10 13 14 16

iii. Round-Robin

Queue: P1 P2
Execution:

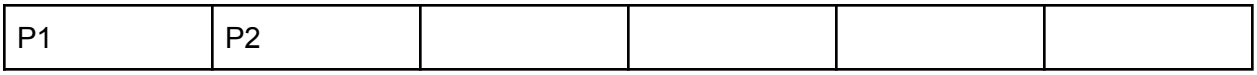


0

Queue: P2 P1
Execution:

0 2

Queue: P1 P3 P4 P2
Execution:

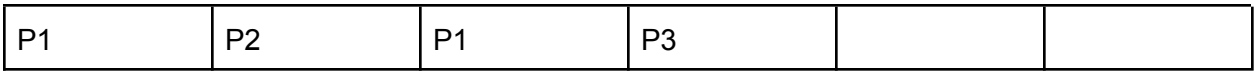


0 2 4

Queue: P3 P4 P2
Execution:

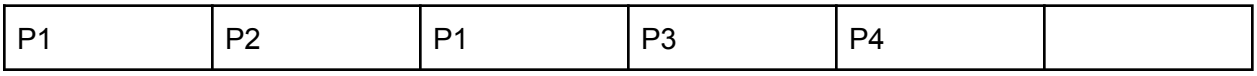
0 2 4 5

Queue: P4 P2 P5 P6 P3
Execution:



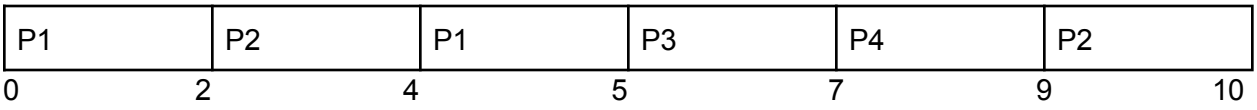
0 2 4 5 7

Queue: P2 P5 P6 P3
Execution:

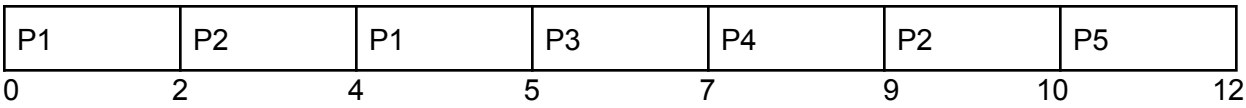


0 2 4 5 7 9

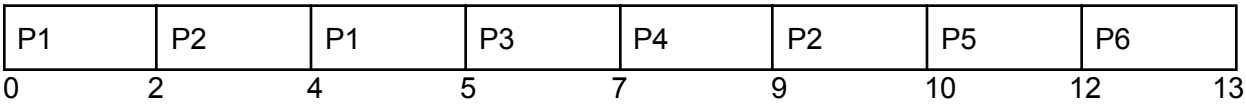
Queue: P5 P6 P3
Execution:



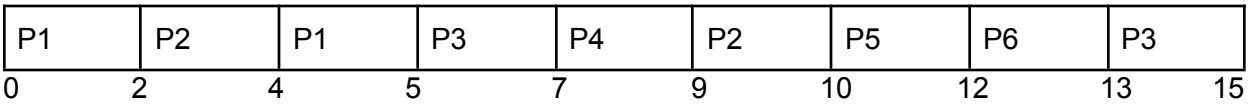
Queue: P6 P3 P5
Execution:



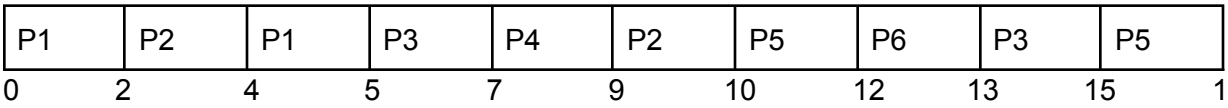
Queue: P3 P5
Execution:



Queue: P5
Execution:



Queue:
Execution:



(b)
Wait time before + Wait time after - Arrival time = Total wait time
P1: 0 + 2 - 0 = 2
P2: 2 + 5 - 0 = 7
P3: 5 + 6 - 3 = 10
P4: 7 + 0 - 4 = 3
P5: 10 + 3 - 8 = 15
P6: 12 + 0 - 8 = 4

(2 + 7 + 10 + 3 + 15 + 4) / 6 = 6.83333

The average wait time for RR is 6.83333