SPOS PROGRAM OUTPUTS

OUTPUT A1

D:\>python spos_a1.py

Pass-I Output:
Symbol Table (SYMTAB): {'FIRST': 1000, 'ALPHA': 1009, 'BETA': 1012, 'GAMMA': 1015}

Intermediate Code:
(1000, 'COPY', 'START', '1000')
(1000, 'FIRST', 'LOAD', 'ALPHA')
(1003, None, 'ADD', 'BETA')
(1006, None, 'STORE', 'GAMMA')
(1009, 'ALPHA', 'WORD', '5')
(1012, 'BETA', 'WORD', '10')
(1015, 'GAMMA', 'RESW', '1')
(1018, None, 'END', 'FIRST')

Pass-II Output (Final Machine Code):
03E8 01 03F1
03EB 03 03F4
03EE 02 03F7
03F1 000005
03F4 00000A
03F7 ----
03FA END

OUTPUT A3:

Enter value of a :
10

Enter value of b :
5

MENU:
1. Add
2. Subtract
3. Multiply
4. Divide
5. Exit

ENTER YOUR CHOICE :
1

10 + 5 = 15

Result of addition: 15

MENU:
1. Add
2. Subtract
3. Multiply
4. Divide
5. Exit

ENTER YOUR CHOICE :
2

10 - 5 = 5

Result of subtraction: 5

MENU:
1. Add
2. Subtract
3. Multiply
4. Divide
5. Exit

ENTER YOUR CHOICE :

3

10 * 5 = 50

Result of multiplication: 50

MENU:
1. Add
2. Subtract
3. Multiply
4. Divide
5. Exit

ENTER YOUR CHOICE :
4

10 / 5 = 2

Result of division: 2

MENU:
1. Add
2. Subtract
3. Multiply
4. Divide
5. Exit

ENTER YOUR CHOICE :
5
Exiting...

OUTPUT B4

```
D:\>g++ spos_b4.cpp

D:\>a.exe
1. Producer
2. Consumer
3. Exit
Enter your choice: 2
Buffer is empty, cannot consume!
1. Producer
2. Consumer
3. Exit
Enter your choice: 1
Data to be produced: 25
1. Producer
2. Consumer
3. Exit
Enter your choice: 1
Data to be produced: 50
1. Producer
2. Consumer
3. Exit
Enter your choice: 2
Data consumed is: 25
1. Producer
2. Consumer
3. Exit
Enter your choice: 2
Data consumed is: 50
1. Producer
2. Consumer
3. Exit
Enter your choice: 3
```

OUTPUT B5

FCFS

D:\>python fcfs.py

Enter the number of processes: 4
Enter arrival time for P0: 0
Enter burst time for P0: 5
Enter arrival time for P1: 1
Enter burst time for P1: 3
Enter arrival time for P2: 2
Enter burst time for P2: 8
Enter arrival time for P3: 3
Enter burst time for P3: 6

PID	Arrival	Burst
P0	0	5
P1	1	3
P2	2	8
P3	3	6

Process Execution Order: P0 P1 P2 P3

PID	Completion	Waiting	Turnaround	Response
P0	5	0	5	0
P1	8	4	7	4
P2	16	6	14	6
P3	22	13	19	13

Average Completion Time: 12.75
Average Waiting Time   : 5.75
Average Turnaround Time: 11.25

SJF

D:\>python sjf.py

Enter number of processes: 4

Enter arrival time for process P0: 0
Enter burst time for process P0: 7

Enter arrival time for process P1: 2
Enter burst time for process P1: 4

Enter arrival time for process P2: 4
Enter burst time for process P2: 1

Enter arrival time for process P3: 5
Enter burst time for process P3: 4

Process execution order:
P0 P0 P1 P1 P2 P1 P1 P3 P3 P3 P3 P0 P0 P0 P0 P0

| PID | Arrival | Burst | Completion | Turnaround | Waiting |

P0	0	7	16	16	9
P1	2	4	7	5	1
P2	4	1	5	1	0
P3	5	4	11	6	2

Average Completion Time: 9.75
Average Turnaround Time: 7.00
Average Waiting Time   : 3.00

PRIORITY

D:\>python priority.py

Enter the number of processes: 4
Enter the arrival time : 0
Enter the burst time: 5
Enter the priority: 2
Enter the arrival time : 1
Enter the burst time: 3
Enter the priority: 1
Enter the arrival time : 2
Enter the burst time: 8
Enter the priority: 4
Enter the arrival time : 3
Enter the burst time: 6
Enter the priority: 3

Process	Completion	Waiting	Turnaround	Response
P1	5	0	5	0
P2	8	4	7	4
P3	22	12	20	12
P4	14	5	11	5

Average completion time: 12.25
Average waiting time: 5.25
Average turnaround time: 10.75

ROUND ROBIN

D:\>python round_robin.py

Enter number of processes: 4
Enter arrival time of P0: 0
Enter burst time of P0: 5
Enter arrival time of P1: 1
Enter burst time of P1: 4
Enter arrival time of P2: 2
Enter burst time of P2: 2
Enter arrival time of P3: 3
Enter burst time of P3: 1
Enter time quantum: 2

Process	Completion Time	Waiting Time	Turnaround Time	Response Time
P0	12	7	12	0
P1	11	6	10	1
P2	6	2	4	2
P3	9	5	6	5

Average Completion Time: 9.50
Average Waiting Time: 5.00
Average Turnaround Time: 8.00

OUTPUT B6

D:\>python spos_b6.py

Enter memory block sizes (space separated): 100 500 200 300 600
Enter process sizes (space separated): 212 417 112 426

Memory blocks: [100, 500, 200, 300, 600]
Processes: [212, 417, 112, 426]

First Fit Allocation:
Process No. | Process Size | Block Allocated | Remaining Fragment
1 | 212 | 2 | 176
2 | 417 | 5 | 183
3 | 112 | 2 | 176
4 | 426 | Not Allocated | -

Best Fit Allocation:
Process No. | Process Size | Block Allocated | Remaining Fragment
1 | 212 | 4 | 88
2 | 417 | 2 | 83
3 | 112 | 3 | 88
4 | 426 | 5 | 174

Next Fit Allocation:
Process No. | Process Size | Block Allocated | Remaining Fragment
1 | 212 | 2 | 288
2 | 417 | 5 | 71
3 | 112 | 5 | 71
4 | 426 | Not Allocated | -

Worst Fit Allocation:
Process No. | Process Size | Block Allocated | Remaining Fragment
1 | 212 | 5 | 71
2 | 417 | 2 | 288
3 | 112 | 5 | 71
4 | 426 | Not Allocated | -

OUTPUT B7

Enter the reference string (space-separated page numbers): 7 0 1 2 0 3 0 4 2 3 0 3 2
Enter the number of frames: 3

FIFO Page Replacement Process:
Page 7 -> Frames: [7]
Page 0 -> Frames: [7, 0]
Page 1 -> Frames: [7, 0, 1]
Page 2 -> Frames: [2, 0, 1]
Page 0 -> Frames: [2, 0, 1]
Page 3 -> Frames: [2, 3, 1]
Page 0 -> Frames: [2, 3, 0]
Page 4 -> Frames: [4, 3, 0]
Page 2 -> Frames: [4, 2, 0]
Page 3 -> Frames: [4, 2, 3]
Page 0 -> Frames: [0, 2, 3]
Page 3 -> Frames: [0, 2, 3]
Page 2 -> Frames: [0, 2, 3]
Total Page Faults (FIFO): 10

LRU Page Replacement Process:
Page 7 -> Frames: [7]
Page 0 -> Frames: [7, 0]
Page 1 -> Frames: [7, 0, 1]
Page 2 -> Frames: [2, 0, 1]
Page 0 -> Frames: [2, 0, 1]
Page 3 -> Frames: [2, 0, 3]
Page 0 -> Frames: [2, 0, 3]
Page 4 -> Frames: [4, 0, 3]
Page 2 -> Frames: [4, 0, 2]
Page 3 -> Frames: [4, 3, 2]
Page 0 -> Frames: [0, 3, 2]
Page 3 -> Frames: [0, 3, 2]
Page 2 -> Frames: [0, 3, 2]
Total Page Faults (LRU): 9

Optimal Page Replacement Process:
Page 7 -> Frames: [7]
Page 0 -> Frames: [7, 0]
Page 1 -> Frames: [7, 0, 1]

Page 2 -> Frames: [2, 0, 1]
Page 0 -> Frames: [2, 0, 1]
Page 3 -> Frames: [2, 0, 3]
Page 0 -> Frames: [2, 0, 3]
Page 4 -> Frames: [2, 4, 3]
Page 2 -> Frames: [2, 4, 3]
Page 3 -> Frames: [2, 4, 3]
Page 0 -> Frames: [2, 0, 3]
Page 3 -> Frames: [2, 0, 3]
Page 2 -> Frames: [2, 0, 3]
Total Page Faults (Optimal): 7

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