

Noman Ahmed
DT-22032

Operating System (CT-353)

Lab no 07

Noman Ahmed
DT-22032

1) Implement the above code and paste the screen shot of the output.

CODE:

```
#include <stdio.h>

int current[5][5], maximum_claim[5][5], available[5];
int allocation[5] = {0};
int maxres[5], running[5], safe = 0;
int counter = 0, i, j, exec, resources, processes;

int main() {
    printf("\nEnter number of processes: ");
    scanf("%d", &processes);
    for (i = 0; i < processes; i++) {
        running[i] = 1;
        counter++;
    }

    printf("\nEnter number of resources: ");
    scanf("%d", &resources);

    printf("\nEnter Claim Vector:");
    for (i = 0; i < resources; i++) {
        scanf("%d", &maxres[i]);
    }

    printf("\nEnter Allocated Resource Table:\n");
    for (i = 0; i < processes; i++) {
```

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```
        for (j = 0; j < resources; j++) {
            scanf("%d", &current[i][j]);
        }
    }

    printf("\nEnter Maximum Claim Table:\n");
    for (i = 0; i < processes; i++) {
        for (j = 0; j < resources; j++) {
            scanf("%d", &maximum_claim[i][j]);
        }
    }

    printf("\nAllocated resources:");
    for (i = 0; i < resources; i++) {
        for (j = 0; j < processes; j++) {
            allocation[i] += current[j][i];
        }
        printf("\t%d", allocation[i]);
    }

    for (i = 0; i < resources; i++) {
        available[i] = maxres[i] - allocation[i];
    }

    printf("\nAvailable resources:");
    for (i = 0; i < resources; i++) {
        printf("\t%d", available[i]);
    }
    printf("\n");

    while (counter != 0) {
        safe = 0;
```

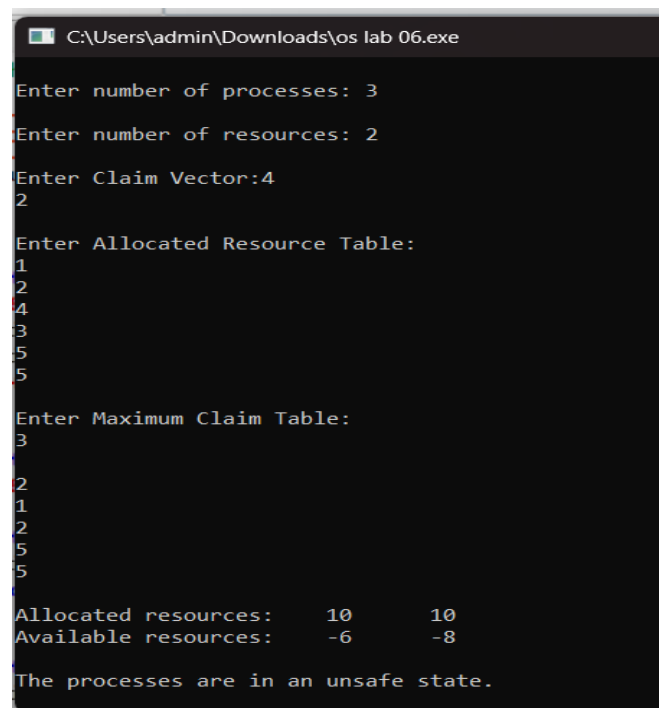
```
for (i = 0; i < processes; i++) {
    if (running[i]) {
        exec = 1;
        for (j = 0; j < resources; j++) {
            if (maximum_claim[i][j] - current[i][j] > available[j]) {
                exec = 0;
                break;
            }
        }
        if (exec) {
            printf("\nProcess %d is executing\n", i + 1);
            running[i] = 0;
            counter--;
            safe = 1;
            for (j = 0; j < resources; j++) {
                available[j] += current[i][j];
            }
            break;
        }
    }
}

if (!safe) {
    printf("\nThe processes are in an unsafe state.\n");
    break;
} else {
    printf("\nThe process is in a safe state\n");
    printf("Available vector:");
    for (i = 0; i < resources; i++) {
        printf("\t%d", available[i]);
    }
    printf("\n");
}
```

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```
}  
    return 0;  
}
```

OUTPUT



```
C:\Users\admin\Downloads\os lab 06.exe  
Enter number of processes: 3  
Enter number of resources: 2  
Enter Claim Vector:4  
2  
Enter Allocated Resource Table:  
1  
2  
4  
3  
5  
5  
Enter Maximum Claim Table:  
3  
2  
1  
2  
5  
5  
Allocated resources:    10    10  
Available resources:   -6    -8  
The processes are in an unsafe state.
```