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++) {
```

Noman Ahmed
DT-22032

```
      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;
```

Noman Ahmed
DT-22032

```
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");
}
```

Noman Ahmed
DT-22032

```
    }
    return 0;
}
```

OUTPUT