WEEK 6

To Simulate bankers algorithm for DeadLock Avoidance (Banker‘s Algorithm)

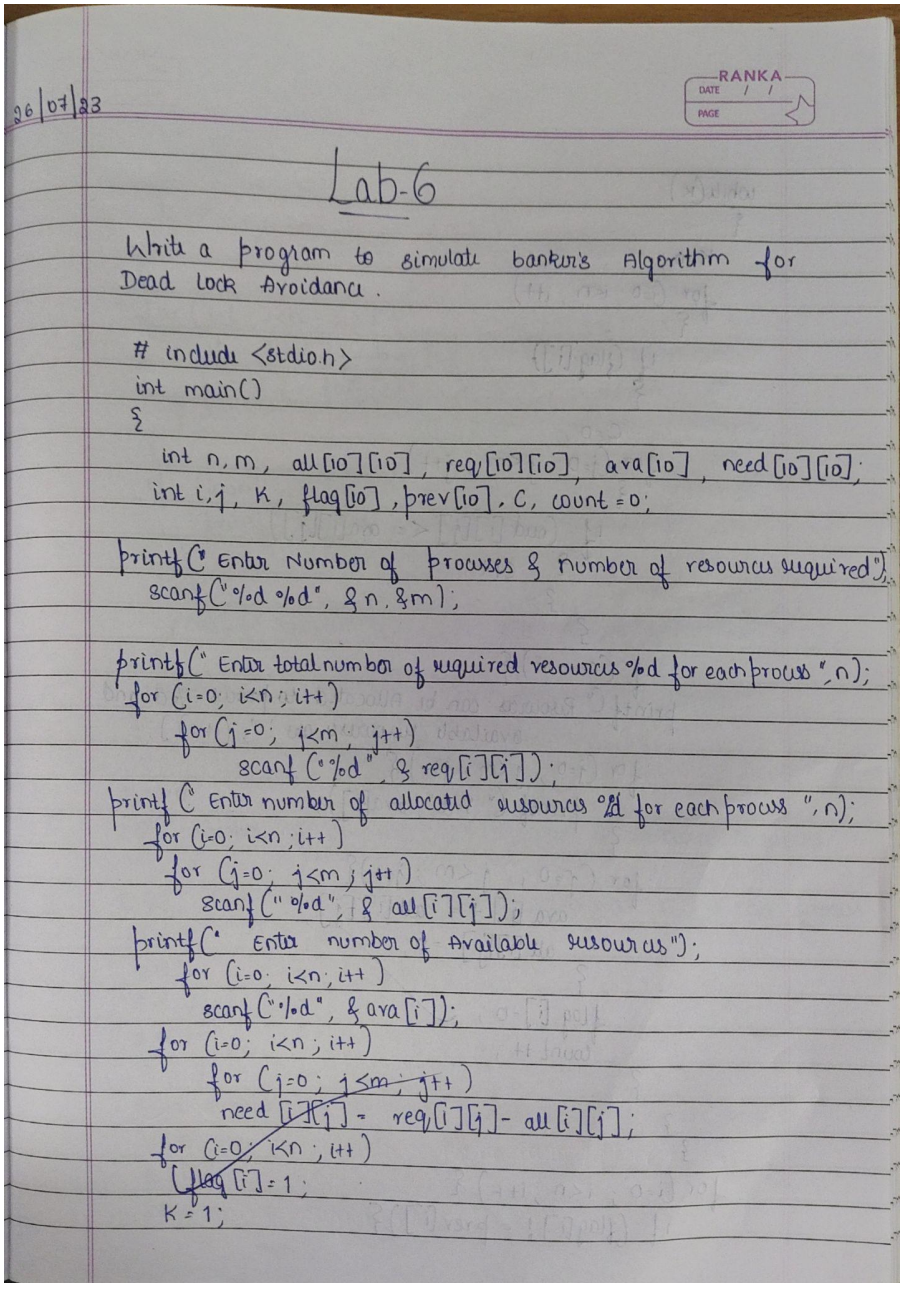
CODE:

```
#include <stdio.h>

int main() {
    int n, m, all[10][10], req[10][10], ava[10], need[10][10];
    int i, j, k, flag[10], prev[10], c, count = 0;

    printf("Enter number of processes and number of resources required \n");
    scanf("%d %d", &n, &m);

    printf("Enter total number of required resources %d for each process\n", n);
    for (i = 0; i < n; i++)
        for (j = 0; j < m; j++)
            scanf("%d", &req[i][j]);

    printf("Enter number of allocated resources %d for each process\n", n);
    for (i = 0; i < n; i++)
        for (j = 0; j < m; j++)
            scanf("%d", &all[i][j]);

    printf("Enter number of available resources \n");
    for (i = 0; i < m; i++)
        scanf("%d", &ava[i]);

    for (i = 0; i < n; i++)
        for (j = 0; j < m; j++)
            need[i][j] = req[i][j] - all[i][j];

    for (i = 0; i < n; i++)
        flag[i] = 1;

    k = 1;

    while (k) {
```

```
    k = 0;

    for (i = 0; i < n; i++) {
        if (flag[i]) {
            c = 0;
            for (j = 0; j < m; j++) {
                if (need[i][j] <= ava[j]) {
                    c++;
                }
            }
            if (c == m) {
                printf("Resouces can be allocated to Process:%d and available resources
are: ", (i + 1));
                for (j = 0; j < m; j++) {
                    printf("%d ", ava[j]);
                }
                printf("\n");

                for (j = 0; j < m; j++) {
                    ava[j] += all[i][j];
                    all[i][j] = 0;
                }

                flag[i] = 0;
                count++;
            }
        }
    }

    for (i = 0; i < n; i++) {
        if (flag[i] != prev[i]) {
            k = 1;
            break;
        }
    }

    for (i = 0; i < n; i++) {
        prev[i] = flag[i];
    }
  }
```

```
    if (count == n) {
        printf("\nSystem is in safe mode ");
    } else {
        printf("\nSystem is not in safe mode deadlock occurred \n");
    }
    return 0;
}
```

OBSERVATION:



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Lab-6

Write a program to simulate banker's Algorithm for Dead lock Avoidance.

```
# include <stdio.h>
int main()
{
  int n, m, all[10][10], req[10][10], ava[10], need[10][10];
  int i,j, K, flag[10], prev[10], C, count=0;

printf(" Enter Number of Processes & number of resources required");
  scanf("%d %d", &n, &m);

printf(" Enter total number of required resources %d for each process ", n);
  for (i=0; i<n; i++)
      for (j=0; j<m; j++)
          scanf ("%d", & req[i][j]);
printf (" Enter number of allocated resources %d for each process ", n);
  for (i=0; i<n; i++)
    for (j=0; j<m; j++)
      scanf (" %d", & all[i][j]);
  printf(" Enter number of Available resources");
    for (i=0; i<n; i++)
      scanf("%d", &ava[i]);
  for (i=0; i<n; i++)
      for (j=0; j<m; j++)
        need[i][j] = req[i][j] - all[i][j];
  for (i=0; i<n; i++)
    flag[i] = 1;
  K = 1;
```

```
while(k)
{
  k=0;
  for (i=0; i<n; i++)
  {
    if (flag[i])
    {
      c=0;
      for (j=0; j<m; j++)
      {
        if (mad[i][j] <= ava[i][j])
        { c++;
        }
      }
      if (c==m) {
        printf(" Resources can be Allocated to process : %d and
                available resources are : ", (i+1));
        for (j=0; j<m; j++) {
          printf (" %d", ava[j]);
        }
        for (j=0; j<m; j++){
          ava[j] += all[i][j];
          all[i][j] = 0;
        }
        flag[i]=0;
        count++;
      }
    }
  }
  for (i=0; i<n; i++) {
    if (flag[i] != prev[i]){
```

```
        K=1;
        break;
      }
    }
    for (i=0; i<n; i++) {
        if (flag[i] != prev[i])
        prev[i] = flag[i];
      }
    }
    if (count==n) {
        printf(" system is in safe mode");
      }
      else {
    printf(" system is not in safe mode deadlock occured ");
    }
    return 0;
}
```

OUTPUT:

```
Enter number of process and number of resources required
5 3
Enter total number of required resources 5 for each process
7 5 3
3 2 2
9 0 2
2 2 2
4 3 3
Enter number of Allocated resources 5 for each process
0 1 0
2 0 0
3 0 2
```

2 1 1
0 0 2
Enter number of available resources
3 3 2

Resources can be allocated to process : 2 and available resources are : 3 3 2
Resources can be allocated to process : 4 and available resources are : 5 3 2
Resources can be allocated to process : 5 and available resources are : 7 4 3
Resources can be allocated to process : 1 and available resources are : 7 4 5
Resources can be allocated to process : 3 and available resources are : 7 5 5
System is in safe mode.

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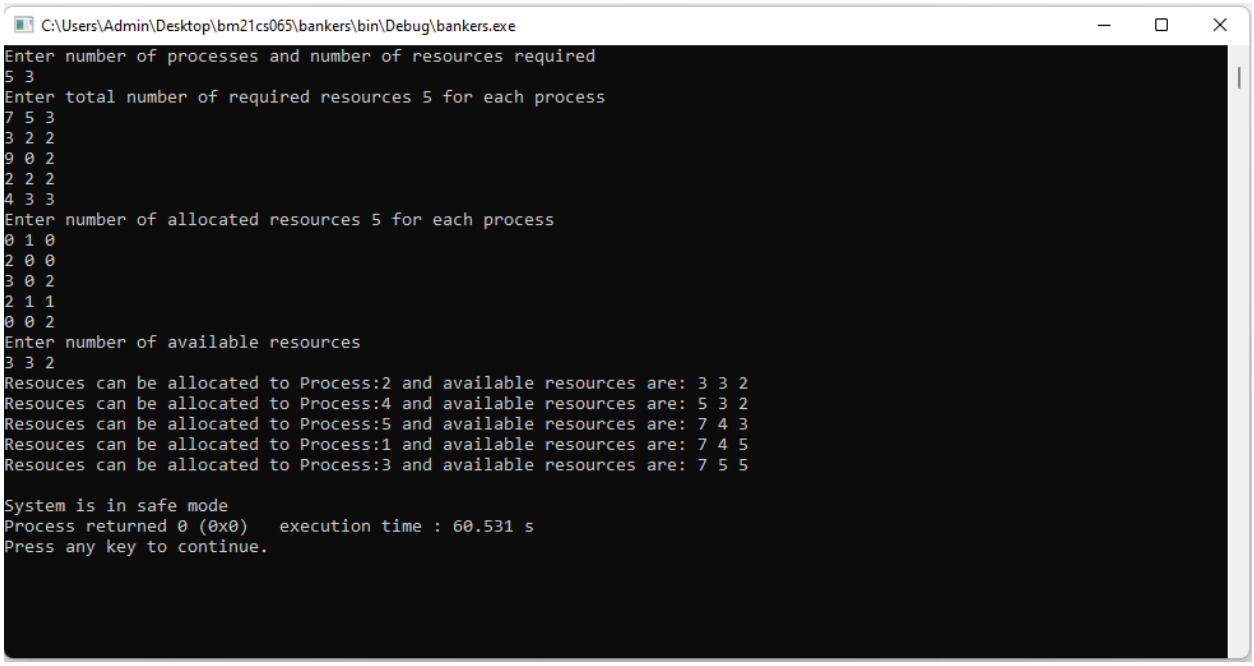
OUTPUT:


C:\Users\Admin\Desktop\bm21cs065\bankers\bin\Debug\bankers.exe
Enter number of processes and number of resources required
5 3
Enter total number of required resources 5 for each process
7 5 3
3 2 2
9 0 2
2 2 2
4 3 3
Enter number of allocated resources 5 for each process
0 1 0
2 0 0
3 0 2
2 1 1
0 0 2
Enter number of available resources
3 3 2
Resouces can be allocated to Process:2 and available resources are: 3 3 2
Resouces can be allocated to Process:4 and available resources are: 5 3 2
Resouces can be allocated to Process:5 and available resources are: 7 4 3
Resouces can be allocated to Process:1 and available resources are: 7 4 5
Resouces can be allocated to Process:3 and available resources are: 7 5 5
System is in safe mode
Process returned 0 (0x0)   execution time : 60.531 s
Press any key to continue.