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Write a c program to simulate deadlock detection.

```
# include <stdio.h>
# define MAX-P 10
# define MAX-R 10
int num-process, num-resources;
int available [MAX-R];
int max [MAX-P] [MAX-R];
int allocation [MAX-P] [MAX-R];
int need [MAX-P] [MAX-R];

void main ()
{  int process-order [MAX-P];
   inputData ();
int flag = checkSafety (process-order);
   if (flag == 1)
   { printf ("Deadlock is not present");
   }
   else
   { printf ("Deadlock is detected \n");
   }
}

int checkSafety (int process-order [])
{  int work [MAX-R];
   int finish [MAX-P] = {0};
for (int i = 0; i < num-resources; i++)
   { work [i] = available [i];
   }
   int completed = 0;
while (completed < num-process)
   { int found = 0;
```

```
for (int i=0; i<num_procs; i++)
  { if (!finish[i])
    {
      int j;
      for (j=0; j<num_resources; j++)
        { if (need[i][j] > work[j])
          { break;
          }
        }
      if (j == num_resources)
        { for (int k=0; k<num_resource; k++)
          { work[k] += allocation[i][k];
          }
          finish[i]=1;
          process_useful[completed]=i;
          completed++;
          found=1;
        }
    }
  if (!found)
    { exit(0);
    }

void inputData()
{ printf("Enter the number of process:");
  scanf("%d", &num_process);
  printf("Enter the number of resources:");
  scanf("%d", &num_resources);
  printf("Enter the available resources:\n");
  for (int i=0; i<num_resource; i++)
    { scanf("%d", &available[i]);
    }
```

```
printf("Enter the request matrix: \n");
for(int i=0; i<num_process; i++);
for(int j=0; j<num_resources; j++)
    { scanf("%d", &max[i][j]);
    }
}
```

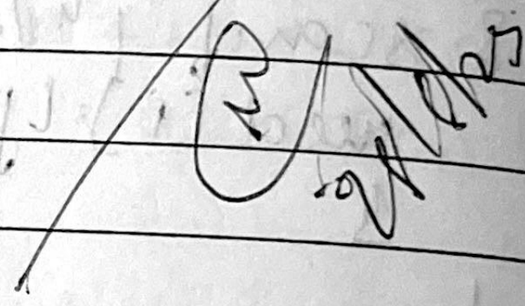
```
printf("Enter the allocation matrix: \n");
for(int i=0; i<num_process; i++)
{ for(int j=0; j<num_resources; j++)
{ scanf("%d", &allocation[i][j]);
need[i][j] = max[i][j] - allocation[i][j];
}
}
```

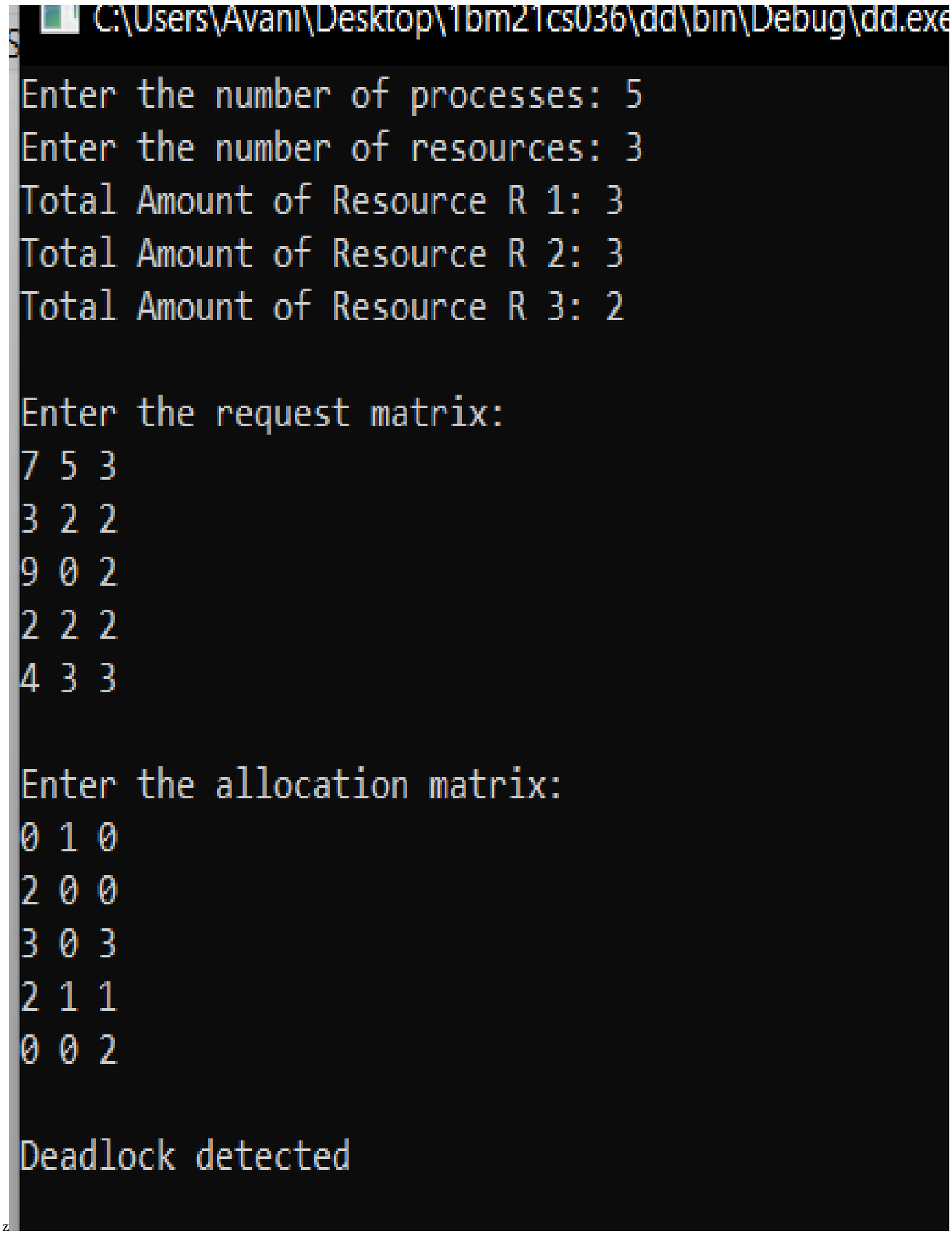
Output:

Enter the number of process: 5
Enter the number of resources: 3
Enter the available resources:
3 3 2
Enter the request matrix:
7 5 3
3 2 2
9 0 2
2 2 2
4 3 3

Enter the allocation matrix
0 1 0
2 0 0
3 0 3
2 1 1
0 0 2.

Deadlock is not present




C:\Users\Avani\Desktop\1bm21cs036\dd\bin\Debug\dd.exe
Enter the number of processes: 5
Enter the number of resources: 3
Total Amount of Resource R 1: 3
Total Amount of Resource R 2: 3
Total Amount of Resource R 3: 2
Enter the request matrix:
7 5 3
3 2 2
9 0 2
2 2 2
4 3 3
Enter the allocation matrix:
0 1 0
2 0 0
3 0 3
2 1 1
0 0 2
Deadlock detected