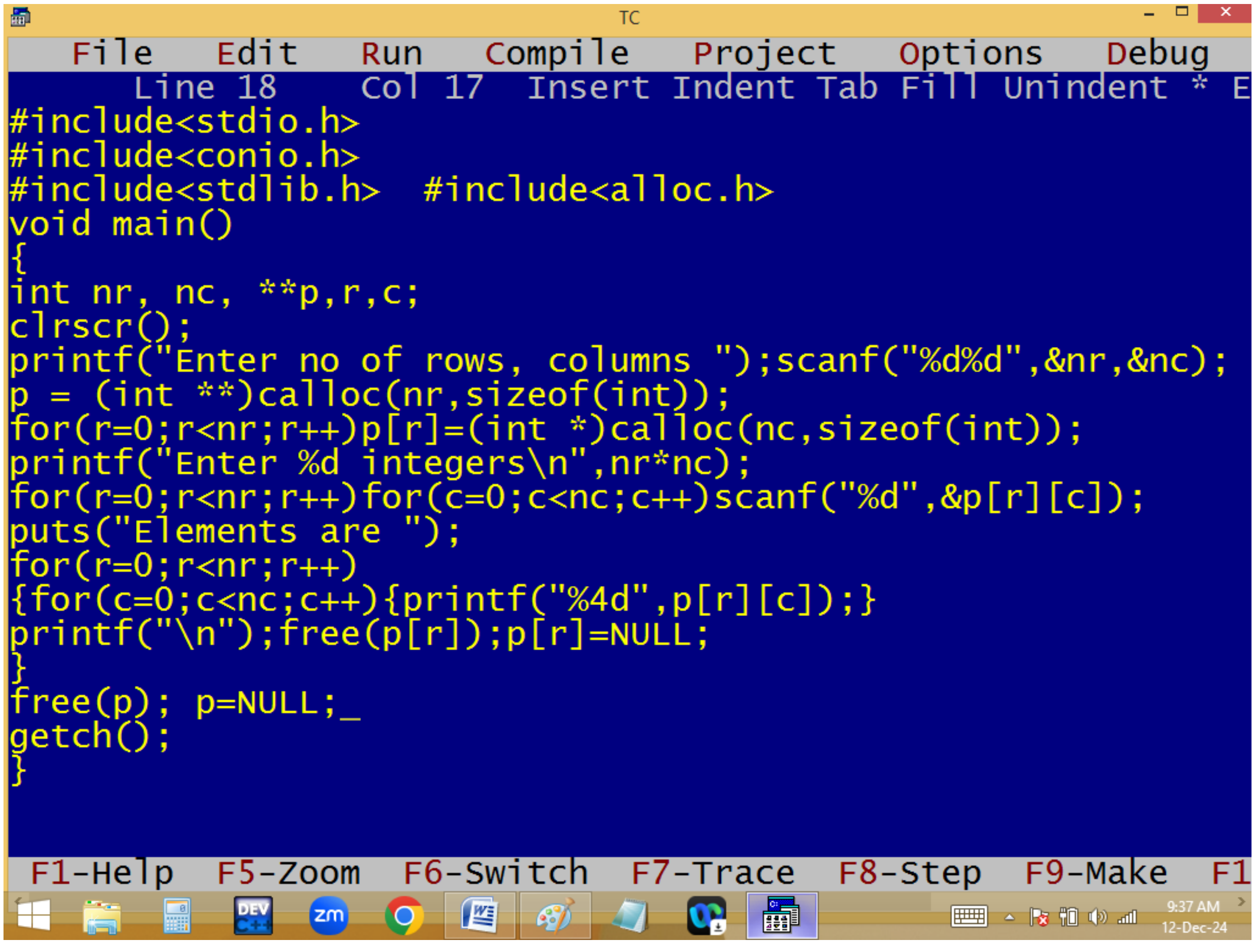
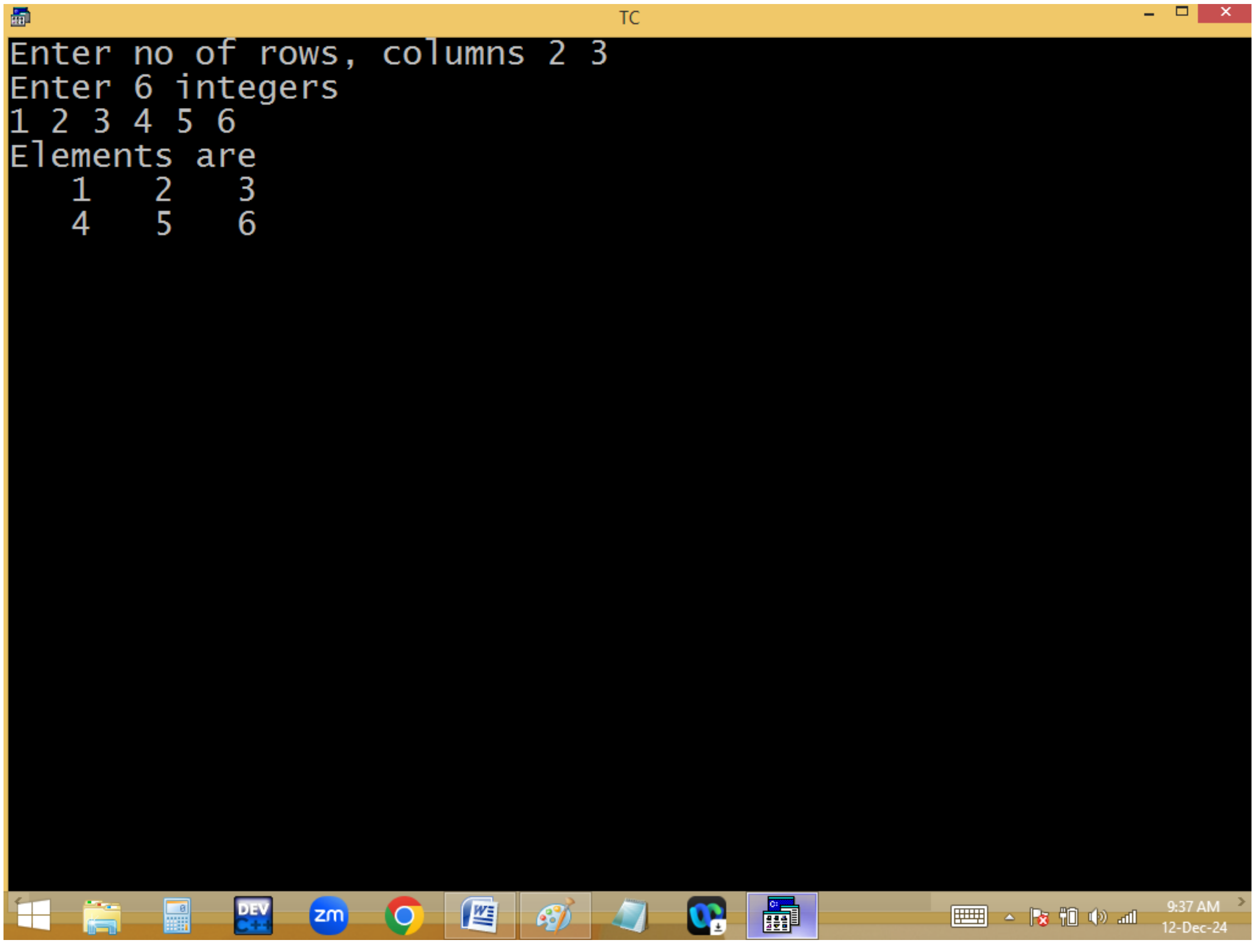
Creating a dynamic multi dimensional array:

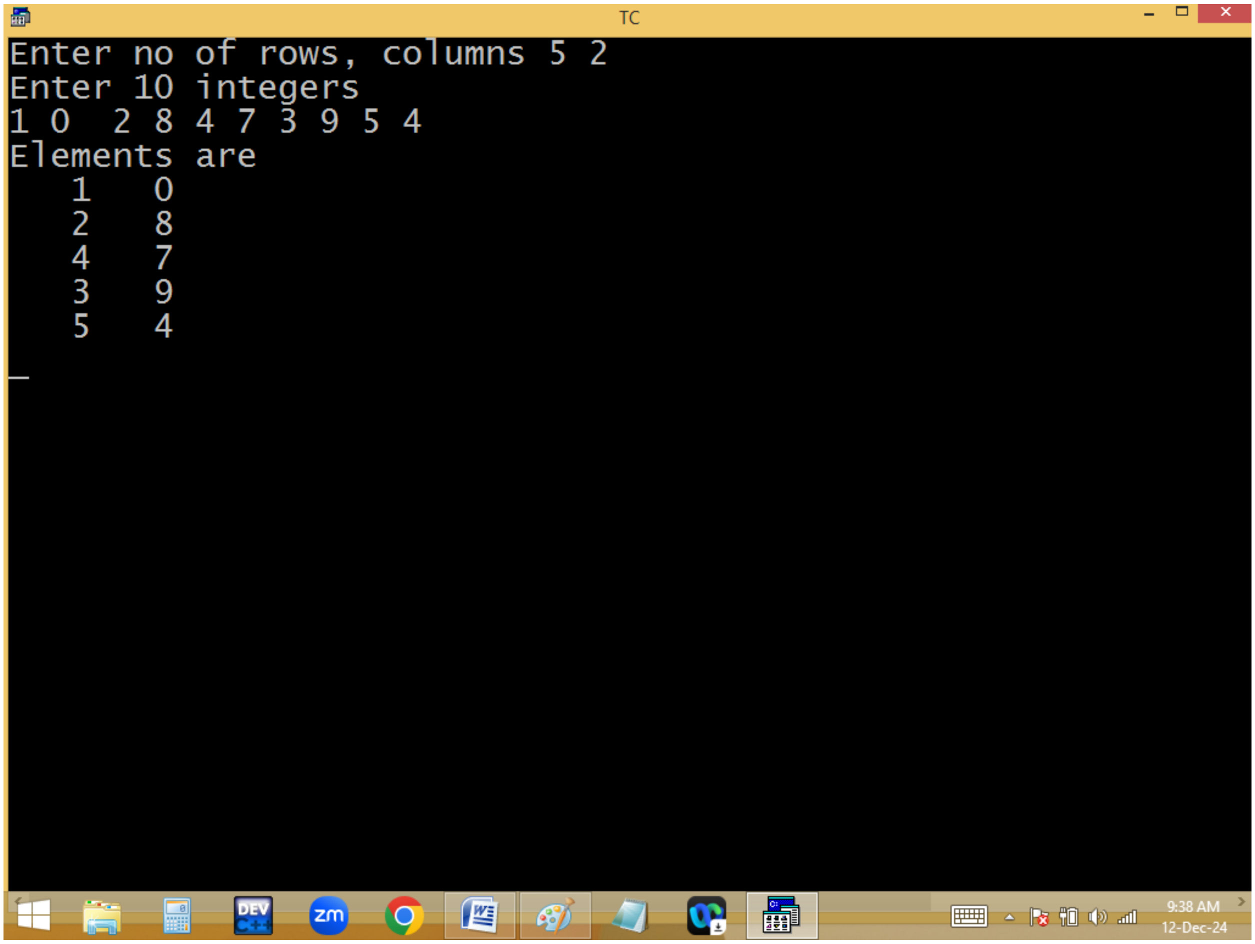


TC
File Edit Run Compile Project Options Debug
Line 18 Col 17 Insert Indent Tab Fill Unindent * E
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F1
9:37 AM
12-Dec-24

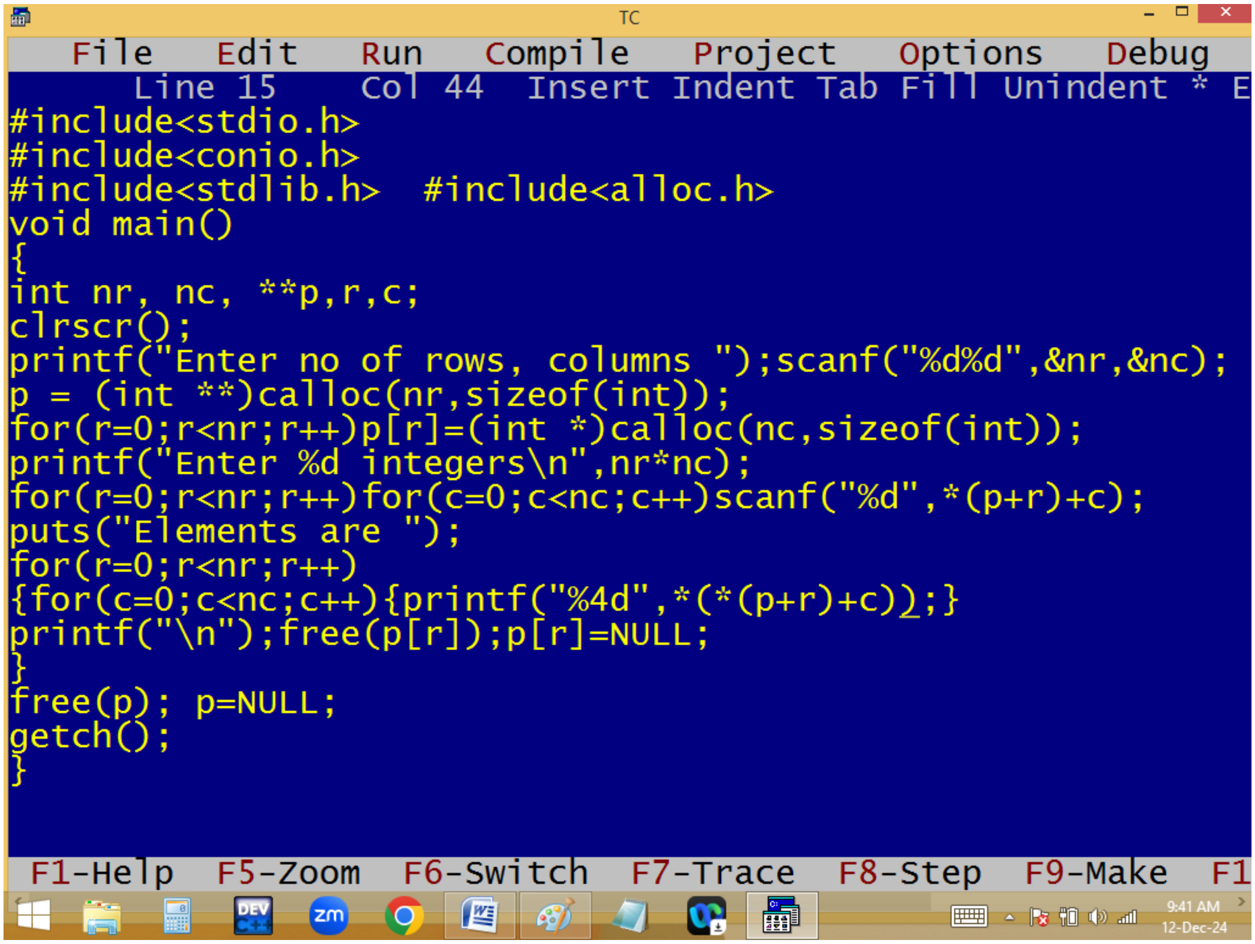
```
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>  #include<alloc.h>
void main()
{
int nr, nc, **p,r,c;
clrscr();
printf("Enter no of rows, columns ");scanf("%d%d",&nr,&nc);
p = (int **)calloc(nr,sizeof(int));
for(r=0;r<nr;r++)p[r]=(int *)calloc(nc,sizeof(int));
printf("Enter %d integers\n",nr*nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)scanf("%d",&p[r][c]);
puts("Elements are ");
for(r=0;r<nr;r++)
{for(c=0;c<nc;c++){printf("%4d",p[r][c]);}
printf("\n");free(p[r]);p[r]=NULL;
}
free(p); p=NULL;
getch();
}
```



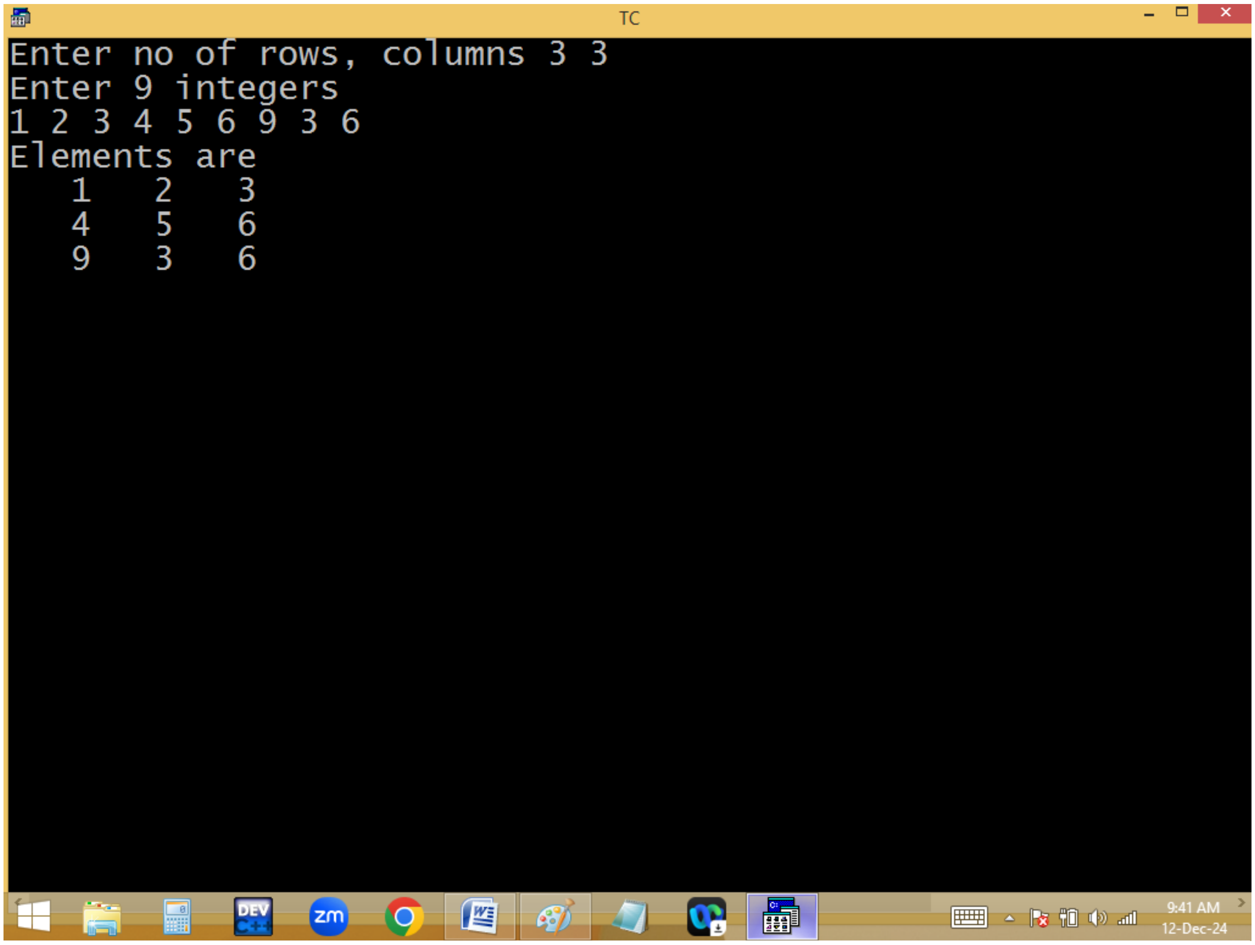
```
Enter no of rows, columns 2 3
Enter 6 integers
1 2 3 4 5 6
Elements are
   1   2   3
   4   5   6
```



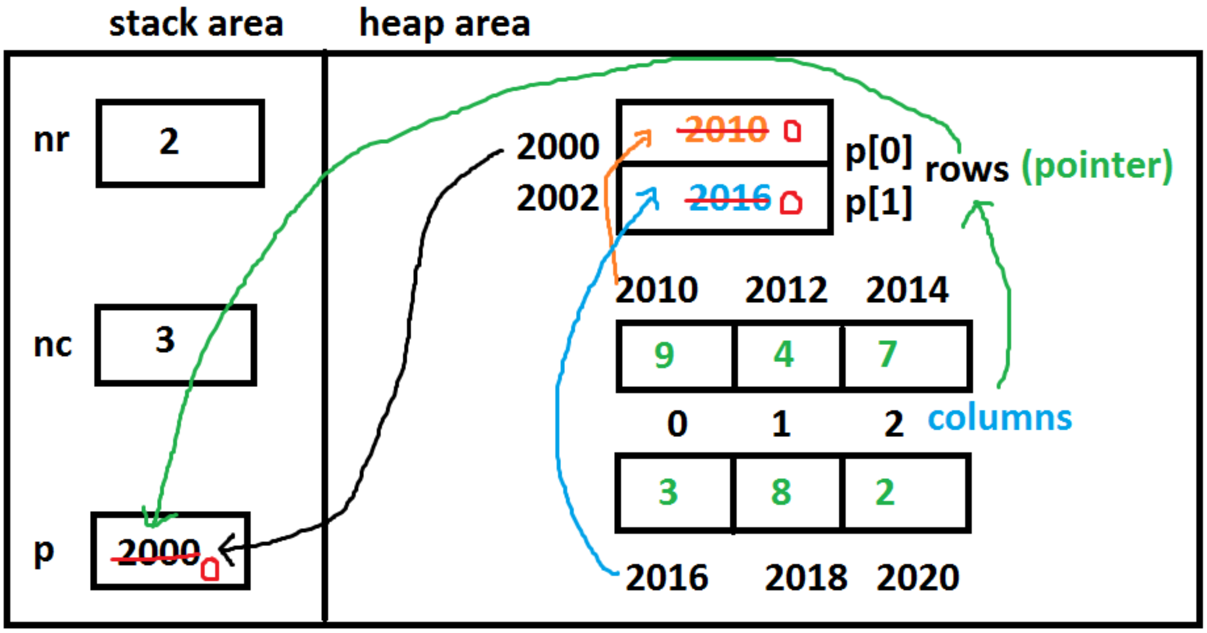
```
Enter no of rows, columns 5 2
Enter 10 integers
1 0  2 8 4 7 3 9 5 4
Elements are
   1   0
   2   8
   4   7
   3   9
   5   4

_
```



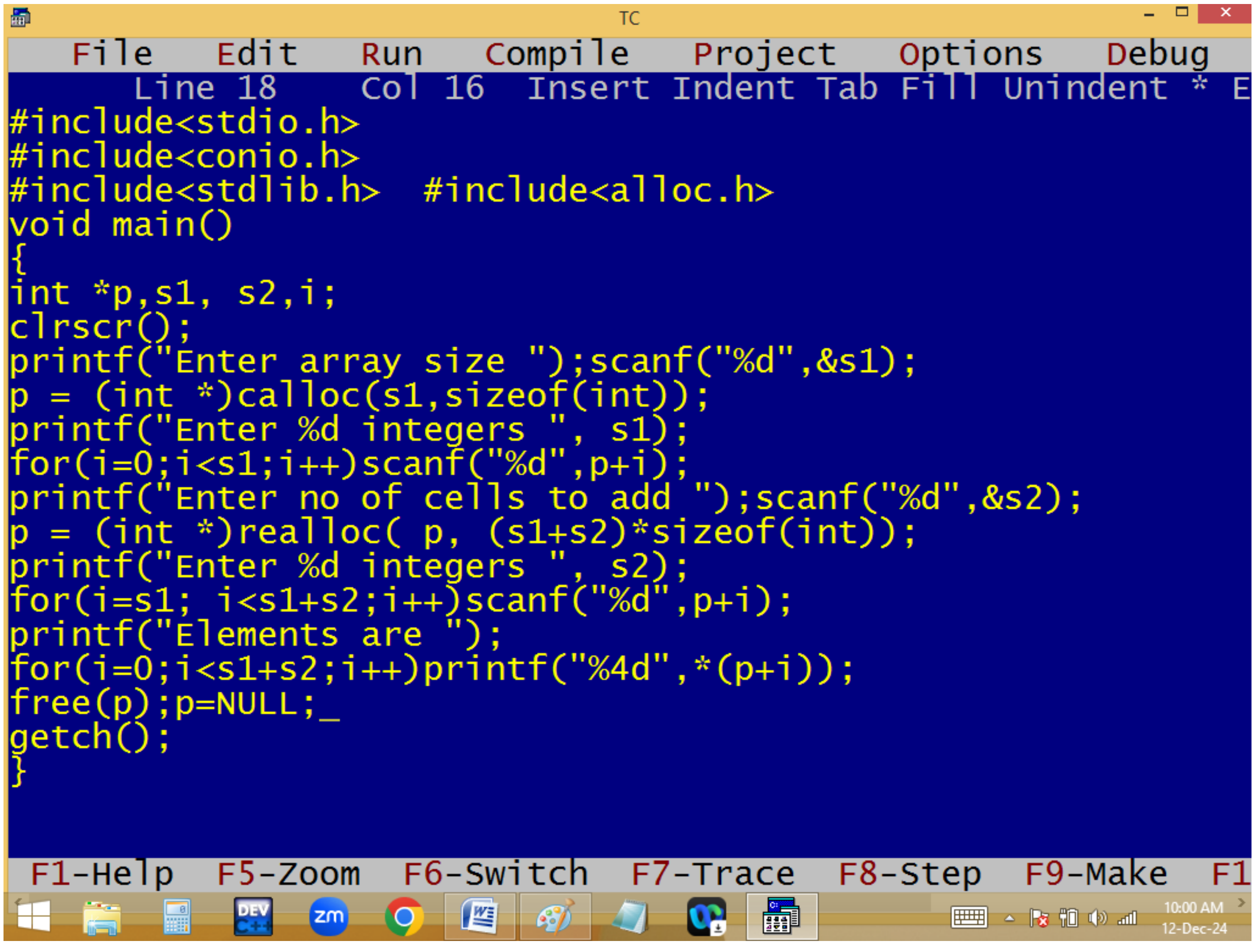
```
      Line 15     Col 44  Insert Indent Tab Fill Unindent * E
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>  #include<alloc.h>
void main()
{
int nr, nc, **p,r,c;
clrscr();
printf("Enter no of rows, columns ");scanf("%d%d",&nr,&nc);
p = (int **)calloc(nr,sizeof(int));
for(r=0;r<nr;r++)p[r]=(int *)calloc(nc,sizeof(int));
printf("Enter %d integers\n",nr*nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)scanf("%d",*(p+r)+c);
puts("Elements are ");
for(r=0;r<nr;r++)
{for(c=0;c<nc;c++){printf("%4d",*(*(p+r)+c));}
printf("\n");free(p[r]);p[r]=NULL;
}
free(p); p=NULL;
getch();
}
```



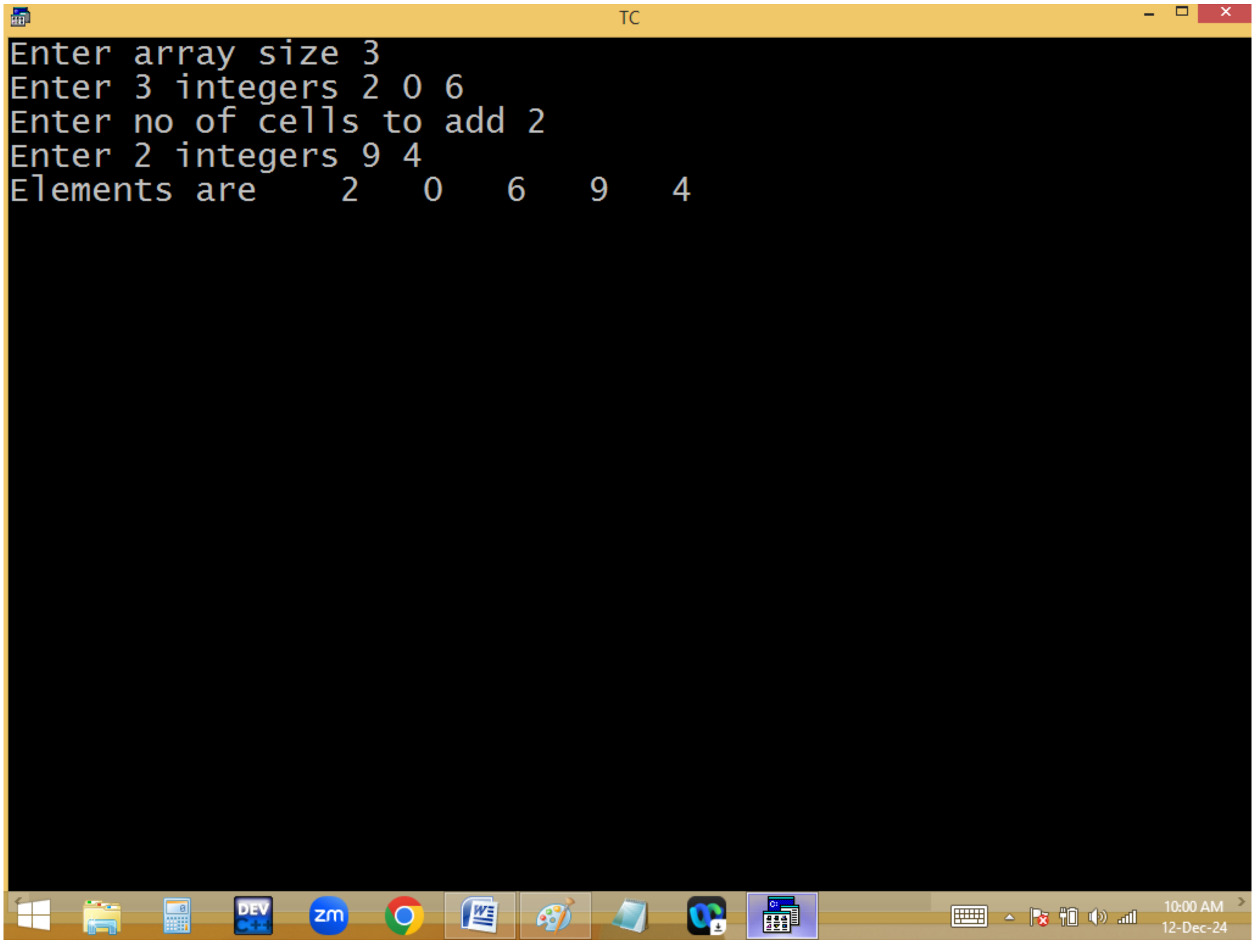
```
Enter no of rows, columns 3 3
Enter 9 integers
1 2 3 4 5 6 9 3 6
Elements are
   1   2   3
   4   5   6
   9   3   6
```



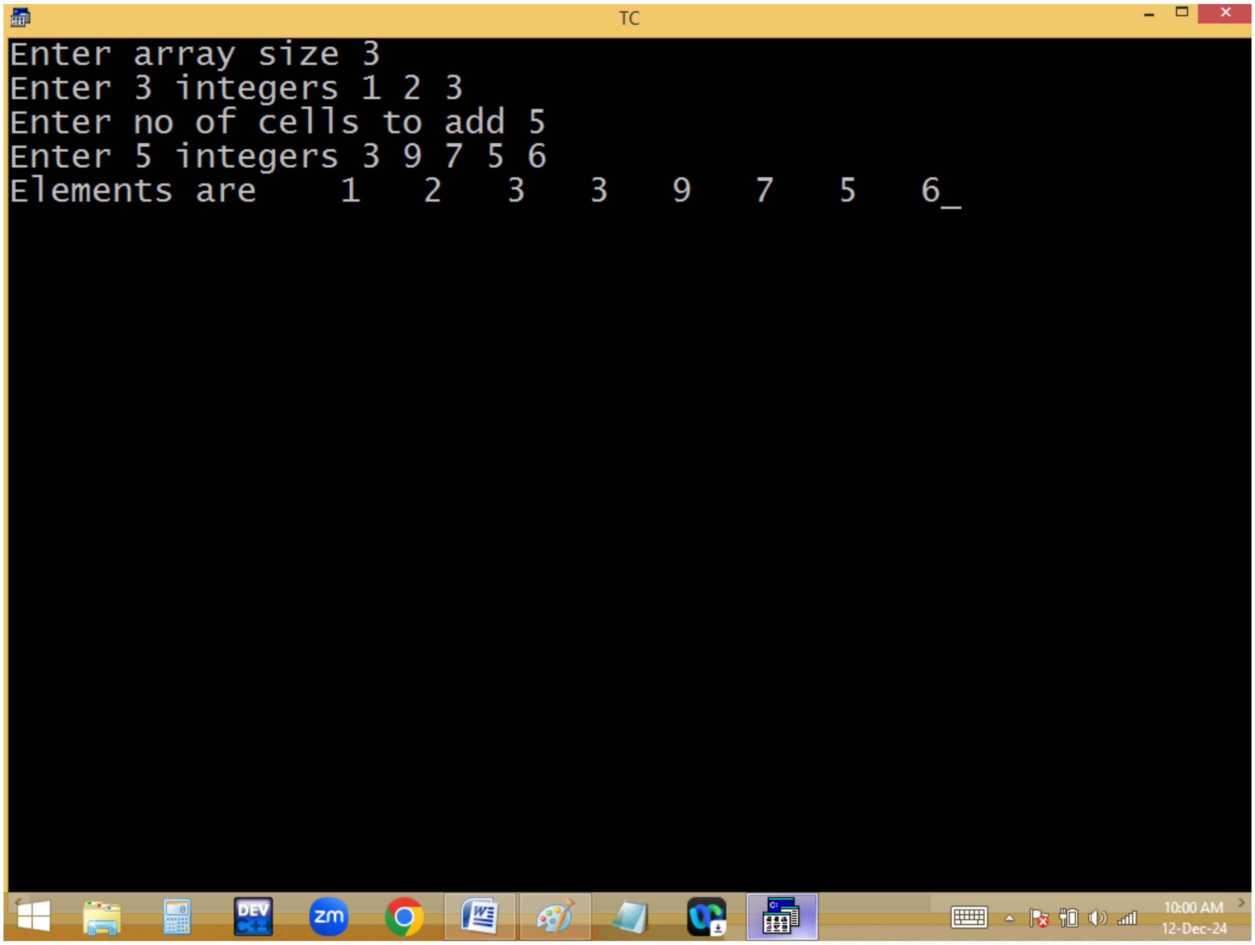
realloc():



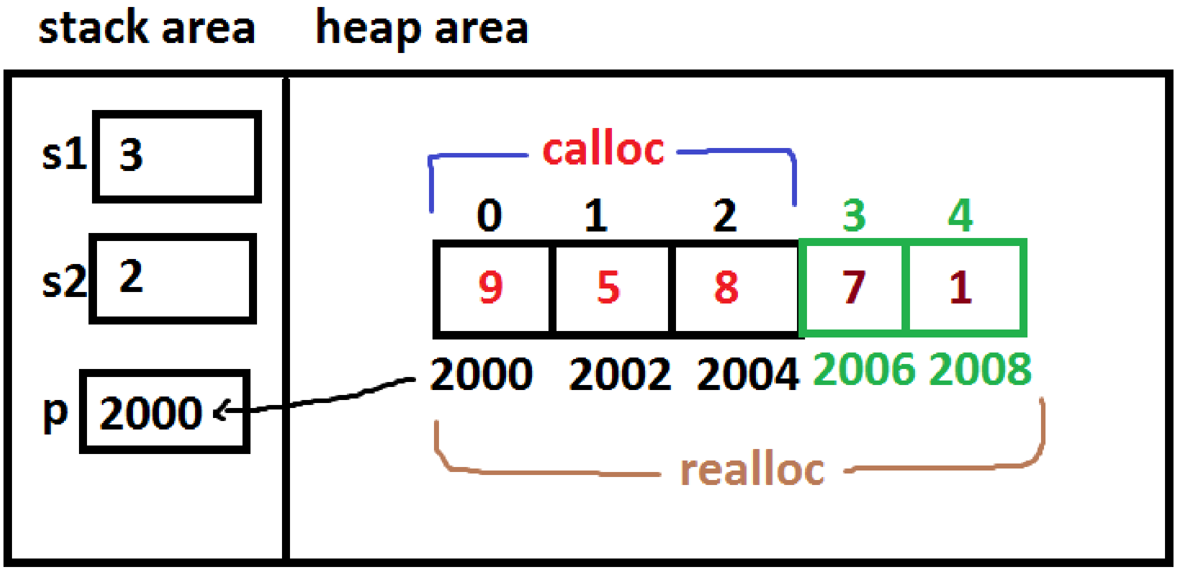
```
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>  #include<alloc.h>
void main()
{
int *p,s1, s2,i;
clrscr();
printf("Enter array size ");scanf("%d",&s1);
p = (int *)calloc(s1,sizeof(int));
printf("Enter %d integers ", s1);
for(i=0;i<s1;i++)scanf("%d",p+i);
printf("Enter no of cells to add ");scanf("%d",&s2);
p = (int *)realloc( p, (s1+s2)*sizeof(int));
printf("Enter %d integers ", s2);
for(i=s1; i<s1+s2;i++)scanf("%d",p+i);
printf("Elements are ");
for(i=0;i<s1+s2;i++)printf("%4d",*(p+i));
free(p);p=NULL;_
getch();
}
```



```
Enter array size 3
Enter 3 integers 2 0 6
Enter no of cells to add 2
Enter 2 integers 9 4
Elements are    2   0   6   9   4
```



```
Enter array size 3
Enter 3 integers 1 2 3
Enter no of cells to add 5
Enter 5 integers 3 9 7 5 6
Elements are    1   2   3   3   9   7   5   6_
```



USER DEFINED FUNCTIONS

What is a function?

It is a small program used to do a particular task.

It is a sub prog / sub routine / procedure / module / structure

It is a reusable code component.

It is a self contained block.

It is a small program within another program.

Adv:

1. Modularity: dividing big program into small modules as per the project requirement.
2. Simplicity: easy to read and understand
3. Reusability: write once, use many times.
4. Efficiency: performance is high

Marriage function

Every function is divided into 3 parts

1. Function declaration / proto type: before main() or within main()
   Eg: void sum();
2. Function calling – within main() only
   Eg: sum();
3. Function definition – outside main() only