1.Write a C/Java program to accept a number n from the user and print n rows of output as given below if n=4.

1

2 3

4 5 6

7 8 9 10

Solution:-

```
  import java.util.Scanner;
public class lab2a {

 public static void main(String[] args)

{
                    int i,j,n,k=1;

                    System.out.print("Input number of rows : ");

                    Scanner in = new Scanner(System.in);
                      n = in.nextInt();

                    for(i=1;i<=n;i++)
                    {
                    for(j=1;j<=i;j++)
                              {
                    System.out.print(k+ "  ");
                               k++;
                              }
                    System.out.print("\n");
```

```
        }


}

}
```

Output:-

```
C:\Users\dell\OneDrive\Desktop\java\lab assignments>javac lab2a.java

C:\Users\dell\OneDrive\Desktop\java\lab assignments>java lab2a
Input number of rows : 4
1
2  3
4  5  6
7  8  9  10

C:\Users\dell\OneDrive\Desktop\java\lab assignments>
```

2.Wriite a C/Java program to accept the CIE marks (Out of 50) and SEE marks (Out of 100) of a student and print his/her grade. Use if… elseif ladder

Solution:-

```
import java.util.Scanner;


public class lab2b
{
   public static void main(String args[])
   {
      int c_marks[] = new int[6];
      int s_marks[]=new int[6];
      int i;
      float total=0, avg;
      Scanner scanner = new Scanner(System.in);



      for(i=0; i<6; i++) {
        System.out.print("Enter CIE Marks of Subject"+(i+1)+":");
        c_marks[i] = scanner.nextInt();
        System.out.print("Enter SEE Marks of Subject"+(i+1)+":");
        s_marks[i] = scanner.nextInt();
        total = total + c_marks[i]+((s_marks[i])/2);
      }
      scanner.close();
      avg = total/6;
      System.out.print("The student Grade is: ");
     if(avg>=90)
      {
          System.out.print("S");
```

```
        }
       else if(avg>=80 && avg<90)
        {
           System.out.print("A");
        }
        else if(avg>=70 && avg<80)
        {
          System.out.print("B");
        }
        else if(avg>=60 && avg<70)
        {
           System.out.print("C");
        }
       else if(avg>=50 && avg<60)
        {
           System.out.print("D");
        }
       else if(avg>=40 && avg<500)
        {
           System.out.print("E");
        }
        else
        {
           System.out.print("F");
        }
    }
}
```

```
C:\Users\dell\OneDrive\Desktop\java\lab assignments>javac lab2b.java

C:\Users\dell\OneDrive\Desktop\java\lab assignments>java lab2b
Enter CIE Marks of Subject1:49
Enter SEE Marks of Subject1:88
Enter CIE Marks of Subject2:40
Enter SEE Marks of Subject2:90
Enter CIE Marks of Subject3:32
Enter SEE Marks of Subject3:66
Enter CIE Marks of Subject4:50
Enter SEE Marks of Subject4:100
Enter CIE Marks of Subject5:42
Enter SEE Marks of Subject5:92
Enter CIE Marks of Subject6:30
Enter SEE Marks of Subject6:66
The student Grade is: A
C:\Users\dell\OneDrive\Desktop\java\lab assignments>
```

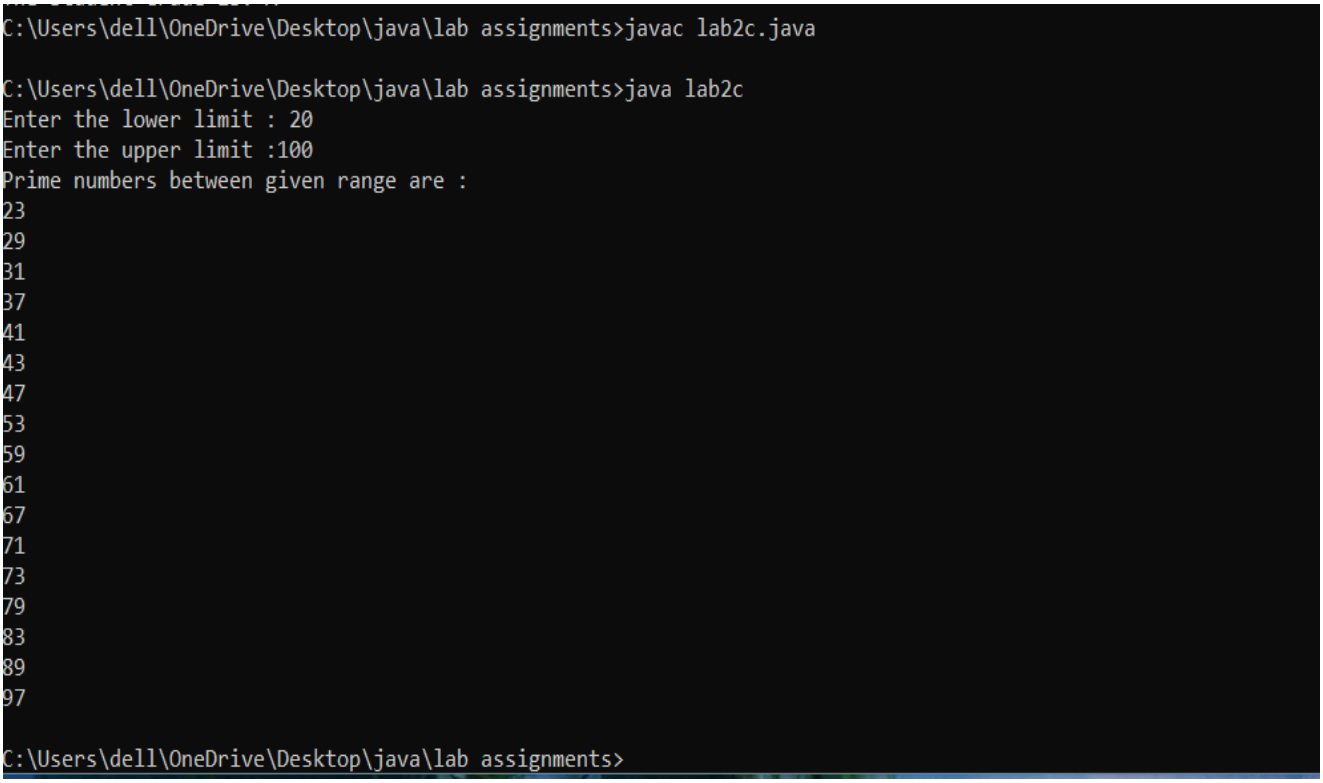
3.Write a C/Java program to print the prime numbers between given two integers (inclusive). Accept these two integers from the user.

Solution:

```
import java.util.Scanner;

public class lab2c
{
	public static void main(String args[])
	{

		int s1, s2,count = 0, i, j;
		Scanner s = new Scanner(System.in);
		System.out.print("Enter the lower limit : ");
		s1 = s.nextInt();
		System.out.print("Enter the upper limit :");
		s2 = s.nextInt();
		System.out.println("Prime numbers between given range are :");

		for(i = s1; i <= s2; i++)
		{
			for( j = 2; j < i; j++)
			{
				if(i % j == 0)
				{
					count = 0;
					break;
				}
```

```
                    else
                    {
                        count = 1;
                    }
                }
                if(count == 1)
                {
                    System.out.println(i);
                }
            }
        }
}
```

Output:


C:\Users\dell\OneDrive\Desktop\java\lab assignments>javac lab2c.java
C:\Users\dell\OneDrive\Desktop\java\lab assignments>java lab2c
Enter the lower limit : 20
Enter the upper limit :100
Prime numbers between given range are :
23
29
31
37
41
43
47
53
59
61
67
71
73
79
83
89
97
C:\Users\dell\OneDrive\Desktop\java\lab assignments>

4.Write a C/Java program which prints the area and volume of any one of the given shapes given below. Accept the choice of the shape, appropriate inputs from the user, calculate and display the area and the volume of the same. Repeat this with different shapes till the user wishes to stop.

Cylinder : Area : A=2πrh+2πr^2 Volume: V=πr 2 h

Cone: Area: A=πr(r+ √(h^2 +r ^2)) Volume: V= πr 2 h/3

Sphere: Area: A= 4πr^2 Volume: V= (4/3) πr 3

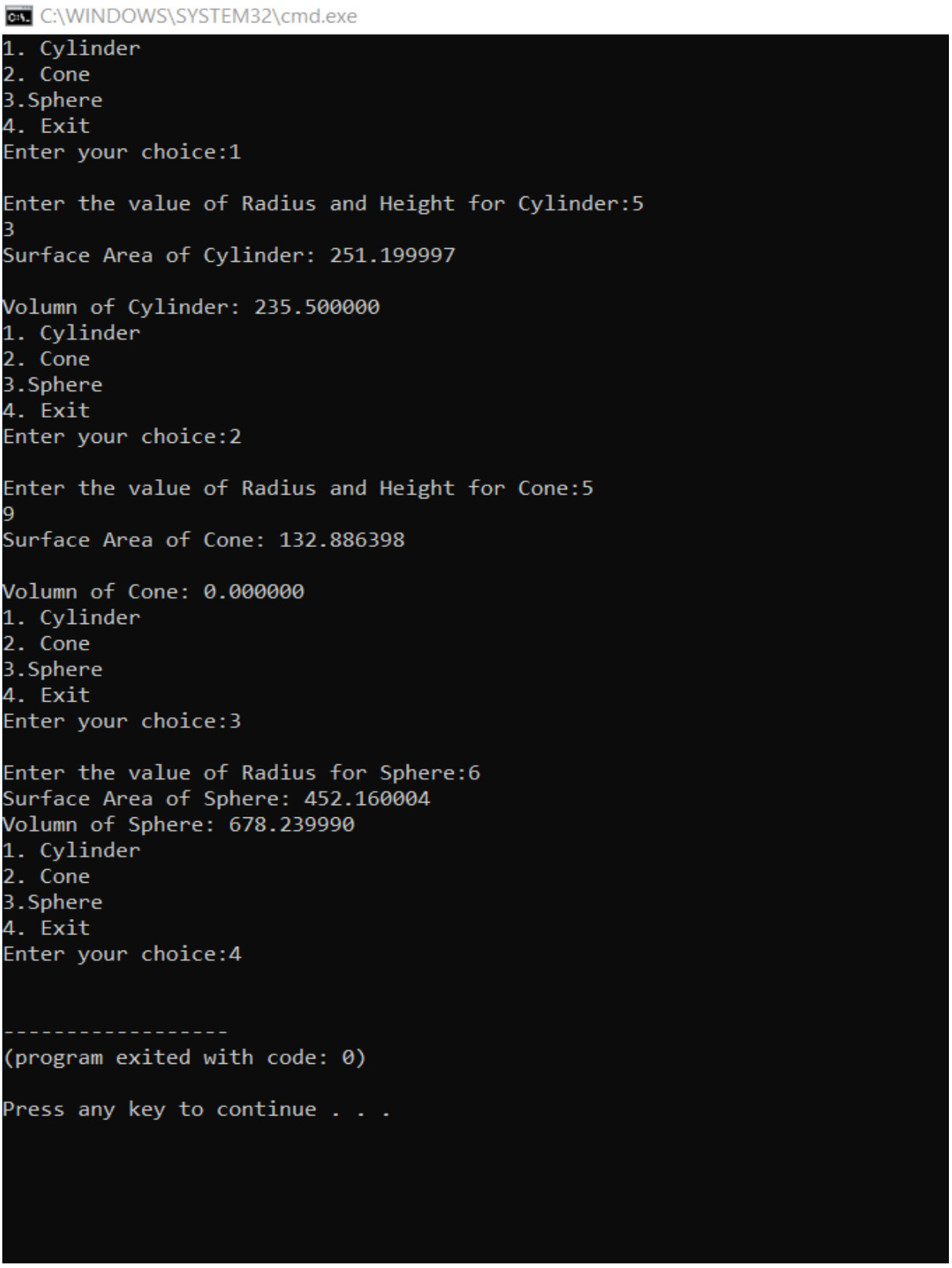
Solution:

```
#include <stdio.h>
#include <conio.h>
#include <stdlib.h>
#include <math.h>
 int main() {
   float v,sa;
   int h,ch,r;

   while(1) {

      printf("1. Cylinder\t\n2. Cone\t\n3.Sphere\n");

      printf("4. Exit\n");

      printf("Enter your choice:");
      scanf("%d", &ch);
      switch(ch) {
```

```
   case 1:
printf("\nEnter the value of Radius and Height for Cylinder:");
scanf("%d%d",&r,&h);
      v=3.14*r*r*h;
      sa=(2*3.14*r*r)+(2*3.14*r*h);
printf("Surface Area of Cylinder: %f\n", sa);
printf("\nVolumn of Cylinder: %f\n",v);

      break;


   case 2:
printf("\nEnter the value of Radius and Height for Cone:");
scanf("%d%d",&r,&h);
      v=(1/3)*3.14*r*r*h;
      sa=3.14*r*(r+ sqrt((h)^2+(r)^2 ));
printf("Surface Area of Cone: %f \n",sa);
printf("\nVolumn of Cone: %f\n",v);

      break;


   case 3:
printf("\nEnter the value of Radius for Sphere:");
scanf("%d",&r);
      v=(4/3)*3.14*r*r*r;
```

```
        sa=4*3.14*r*r;
    printf("Surface Area of Sphere: %f\n", sa);
    printf("Volumn of Sphere: %f\n",v);

        break;


      case 4:
        exit(0);

      default:
        printf("Wrong OPTION IS BEEN ENTER!!\n");
        break;
    }

      }
      return 0;
}
```

Output:


C:\WINDOWS\SYSTEM32\cmd.exe
1. Cylinder
2. Cone
3.Sphere
4. Exit
Enter your choice:1
Enter the value of Radius and Height for Cylinder:5
3
Surface Area of Cylinder: 251.199997
Volumn of Cylinder: 235.500000
1. Cylinder
2. Cone
3.Sphere
4. Exit
Enter your choice:2
Enter the value of Radius and Height for Cone:5
9
Surface Area of Cone: 132.886398
Volumn of Cone: 0.000000
1. Cylinder
2. Cone
3.Sphere
4. Exit
Enter your choice:3
Enter the value of Radius for Sphere:6
Surface Area of Sphere: 452.160004
Volumn of Sphere: 678.239990
1. Cylinder
2. Cone
3.Sphere
4. Exit
Enter your choice:4
(program exited with code: 0)
Press any key to continue . . .

5.Write a C program to count the number of students registered for three elective courses. Accept the names of n students, their choice of the elective (Say, the electives courses offered are Internet of Things, Advanced Java and J2EE and Advanced Data Structures).

Include the following operations:

1. Accept say x from the user. Display the names of the students who have opted for elective x

2. Count and display the total number of students present in each elective.

3. If count is less than 30, inform that the course will not be floated and ask the students who have opted the course to reselect their electives from the other two. Count and display the counts again.

4. Display the name of the students in each elective.

Solution:

```
#include <stdio.h>
#define MAX 100
int main()
{
   int n=0, i=0, c=0, c1=0, c2=0, c3=0;
   int f1=1,f2=1,f3=1;
   char iot[MAX][20], j2ee[MAX][20], aj[MAX][20];
   printf("Enter number of students (Less than 101) : ");
   scanf("%d", &n);
   for(i = 0;i < n ; i++)
   {
      if(f1)
         printf("Enter 1 for IOT\n");
```

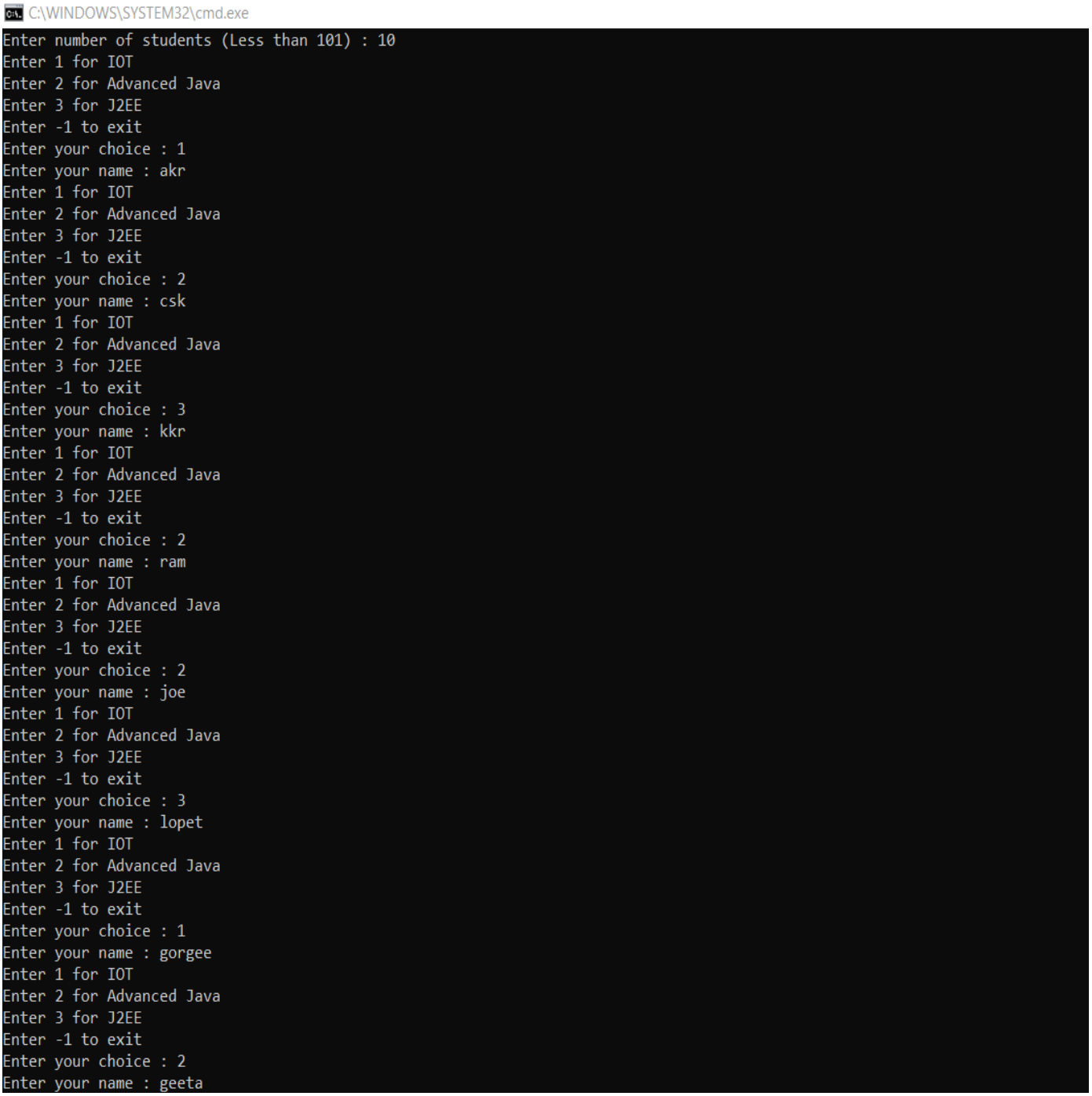
```
if(f2)
   printf("Enter 2 for Advanced Java\n");
if(f3)
   printf("Enter 3 for J2EE\n");
printf("Enter -1 to exit\n");
printf("Enter your choice : ");
scanf("%d", &c);
if(c==-1)
   break;
switch(c)
{
   case 1:
      printf("Enter your name : ");
      scanf("%s",iot[c1++]);

      break;
   case 2:
      printf("Enter your name : ");
        scanf("%s",aj[c2++]);
      break;
   case 3:
      printf("Enter your name : ");
        scanf("%s",j2ee[c3++]);
      break;
   default:
      printf("\n\nInvalid input\n\n");
      break;
```

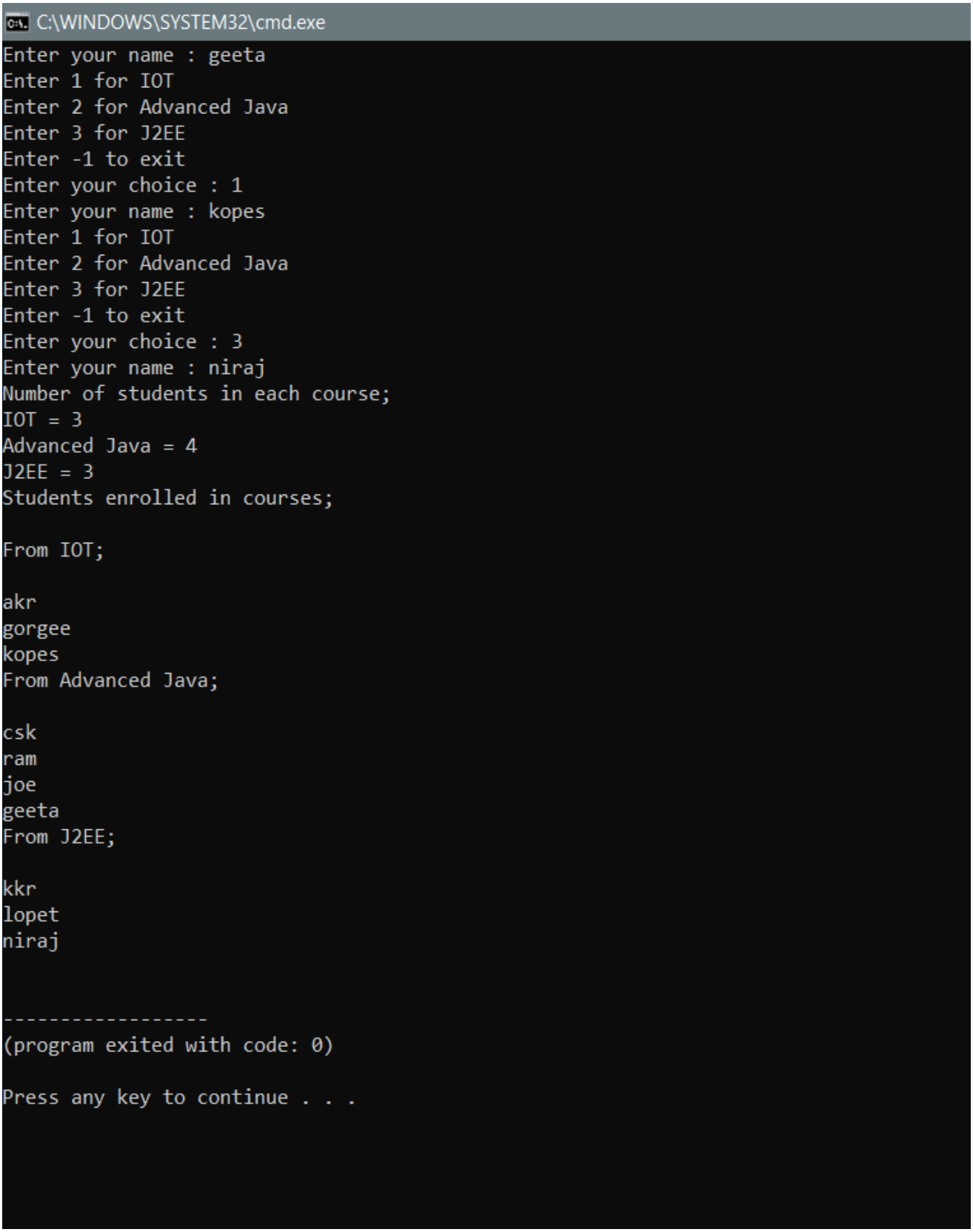
```
    }
    if(i==n)
    {
        i=-1;
        n=0;
        if(c1<30)
        {
            f1=0;
            n = n+c1;
            c1=0;
        }
        if(c2<30)
        {
            f2=0;
            n = n+c2;
            c2=0;
        }
        if(c3<30)
        {
            f3=0;
            n = n+c3;
            c3=0;
        }
    }
}
printf("Number of students in each course;\n");
printf("IOT = %d\n", c1);
```

```
printf("Advanced Java = %d\n", c2);
printf("J2EE = %d\n", c3);



  printf("Students enrolled in courses;\n\n");
  if(f1){
  printf("From IOT;\n\n");
  for(i=0;i<c1;i++)
  {
       printf(iot[i]);
        printf("\n");
  }}
  if(f2){
  printf("From Advanced Java;\n\n");
  for(i=0;i<c2;i++)
  {
       printf(aj[i]);
       printf("\n");
  }}
  if(f3){
  printf("From J2EE;\n\n");
  for(i=0;i<c3;i++)
  {
    printf(j2ee[i]);
     printf("\n");
  }}
```

return 0;

}


C:\WINDOWS\SYSTEM32\cmd.exe
Enter number of students (Less than 101) : 10
Enter 1 for IOT
Enter 2 for Advanced Java
Enter 3 for J2EE
Enter -1 to exit
Enter your choice : 1
Enter your name : akr
Enter 1 for IOT
Enter 2 for Advanced Java
Enter 3 for J2EE
Enter -1 to exit
Enter your choice : 2
Enter your name : csk
Enter 1 for IOT
Enter 2 for Advanced Java
Enter 3 for J2EE
Enter -1 to exit
Enter your choice : 3
Enter your name : kkr
Enter 1 for IOT
Enter 2 for Advanced Java
Enter 3 for J2EE
Enter -1 to exit
Enter your choice : 2
Enter your name : ram
Enter 1 for IOT
Enter 2 for Advanced Java
Enter 3 for J2EE
Enter -1 to exit
Enter your choice : 2
Enter your name : joe
Enter 1 for IOT
Enter 2 for Advanced Java
Enter 3 for J2EE
Enter -1 to exit
Enter your choice : 3
Enter your name : lopet
Enter 1 for IOT
Enter 2 for Advanced Java
Enter 3 for J2EE
Enter -1 to exit
Enter your choice : 1
Enter your name : gorgee
Enter 1 for IOT
Enter 2 for Advanced Java
Enter 3 for J2EE
Enter -1 to exit
Enter your choice : 2
Enter your name : geeta


C:\WINDOWS\SYSTEM32\cmd.exe
Enter your name : geeta
Enter 1 for IOT
Enter 2 for Advanced Java
Enter 3 for J2EE
Enter -1 to exit
Enter your choice : 1
Enter your name : kopes
Enter 1 for IOT
Enter 2 for Advanced Java
Enter 3 for J2EE
Enter -1 to exit
Enter your choice : 3
Enter your name : niraj
Number of students in each course;
IOT = 3
Advanced Java = 4
J2EE = 3
Students enrolled in courses;
From IOT;
akr
gorgee
kopes
From Advanced Java;
csk
ram
joe
geeta
From J2EE;
kkr
lopet
niraj
(program exited with code: 0)
Press any key to continue . . .