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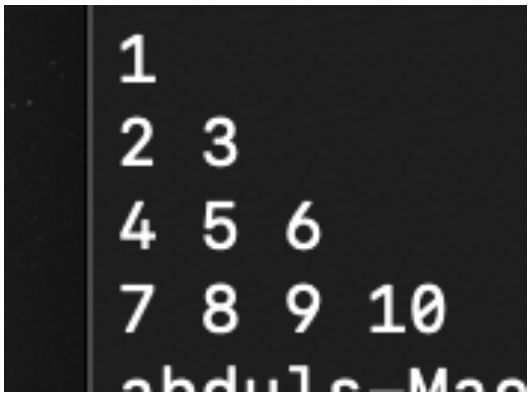
1BM19CS202
3-D
LAB WEEK 2 PROGRAMS (1st OCT)

Q3.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.

```
class Rows{
  public static void main(String args[]) {
        int a[][]=new int[4][];
        a[0]=new int[1];
        a[1]=new int[2];
        a[2]=new int[3];
        a[3]=new int[4];

      int i,j,k=1;
      for(i=0;i<4;i++)
      for(j=0;j<i+1;j++){
          a[i][j]=k;
          k++;
      }
      for(i=0;i<4;i++){
      for(j=0;j<i+1;j++)
      System.out.print(a[i][j]+" ");
      System.out.println();

}
}
}
```

OUTPUT-

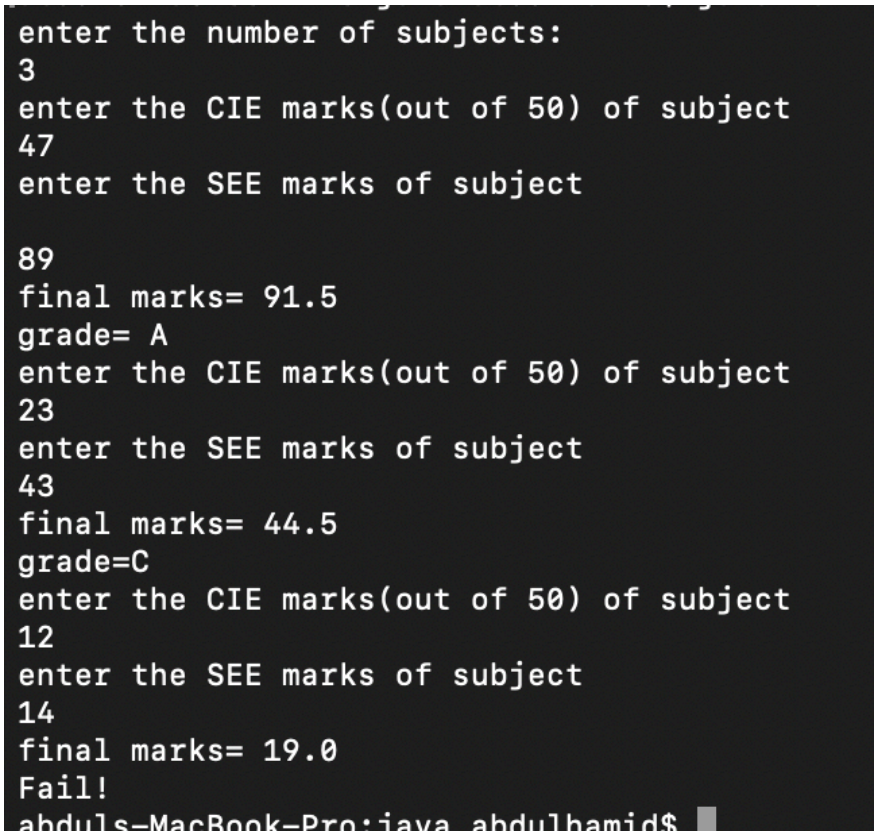


Q4. Wriite a C/Java program to accept the CIE marks (Out of 50) and SEE marks (Out of
100) of a student and print his/her grade. Use if… elseif ladder

```
import java.util.Scanner;
 class Main{
  public static void main(String args[]) {
      int n,i=0;
      Scanner in=new Scanner(System.in);
      System.out.println("enter the number of subjects:");
      n=in.nextInt();

      while(i<n){
      float marks_cie,marks_see;
      double total=0;
      Scanner m=new Scanner(System.in);
          System.out.println("enter the CIE marks(out of 50) of subject ");
          marks_cie=m.nextFloat();


          System.out.println("enter the SEE marks of subject ");
           marks_see=m.nextFloat();

            total=marks_cie+(marks_see/2);
           System.out.println("final marks= "+total);
           if(total>=80){
              System.out.println("grade= A");
           }
           else if (total>=60 && total<80){
              System.out.println("grade=B");
           }
           else if(total>=40 && total<60){
              System.out.println("grade=C");
           }
           else if(total>=30 && total<40){
```

```
            System.out.println("grade=D");
        }
        else{
            System.out.println("Fail!");
        }
        i++;
    }
  }
}
```

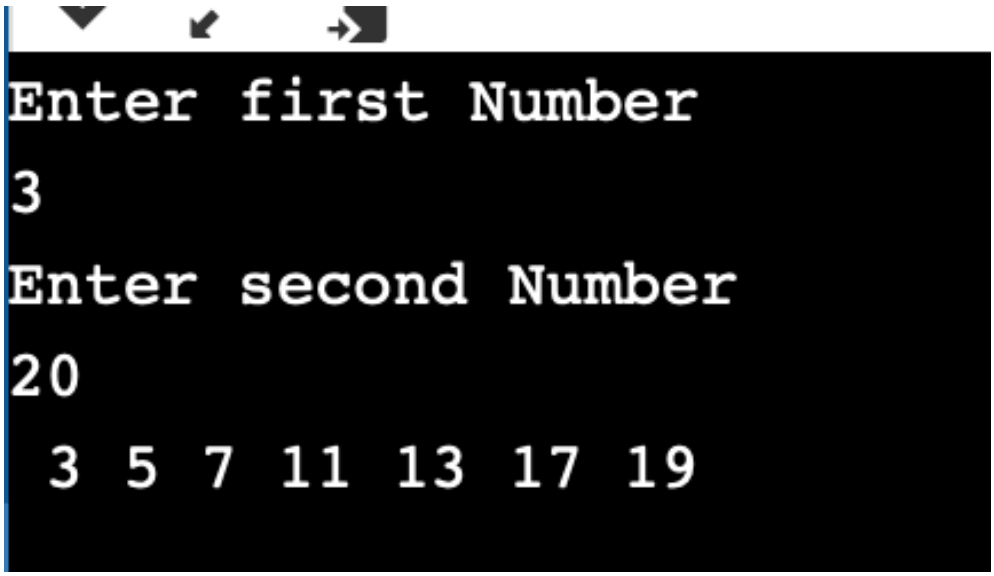
OUTPUT-



Q5)Write a C/Java program to print the prime numbers between given two integers
(inclusive). Accept these two integers from the user.

```
import java.util.Scanner;
class Prime{
  public static void main(String[] args) {
    int n1,n2,i=0;
    int flag;
    Scanner m=new Scanner(System.in);

    System.out.println("enter the first number\n");
    n1=m.nextInt();
    System.out.println("enter the second number\n");
    n2=m.nextInt();

    while(n1<n2){
      flag=0;
      for(i=2;i<=n1/2;i++){
        if(n1%i==0){
          flag=1;
          break;
        }
      }
        if(flag==0)
          System.out.println(" "+n1);
          n1++;
                                                    }
                                                  }
                                                }
```

OUTPUT-



Q6. 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

```
#include<stdio.h>
#include<math.h>
void cylinder();
void cone();
void sphere();

void cylinder()
{
   float a,v,r,h;
   printf("enter the radius and height\n");
   scanf("%f %f",&r,&h);
   a=(2*3.14*r*h)+(2*3.14*r*r);
   v=(3.14*r*r*h);
   printf("the Area =%f and volume= %f\n",a,v);
}

void cone()
{
   float r,v,a,h,q;
   printf("enter the radius and height\n");
   scanf("%f %f",&r,&h);
   q=sqrt((h*h)+(r*r));
   a=(3.14*r*(r+q));
   v=(3.14*r*r*(h/3.0));
   printf("the area =%f and volume= %f\n",a,v);
}


void sphere()
{
```

```
    float r,a,v;
    printf("enter the raduis\n");
    scanf("%f",&r);
    a=4*3.14*r*r;
    v=(4.0/3.0)*3.14*r*r*r;
    printf("the area=%f and volume=%f\n",a,v);

}
 int main()
 {
    int v;
    do{
    printf("Enter your choice\n");
    printf("1.cylinder\n 2.cone\n 3.sphere\n");
    scanf("%d",&v);

    switch(v)
    {
       case 1:
       cylinder();
       break;
       case 2:
       cone();
       break;
      case 3:
       sphere();
       break;
       default:
       printf("wrong input, try again!\n");
    }
    }while(v!=3);

 }
```

OUTPUT-

```
Enter your choice
1.cylinder
 2.cone
 3.sphere
1
enter the radius and height
4
5
the Area =226.080002 and volume= 251.199997
Enter your choice
1.cylinder
 2.cone
 3.sphere
```

7. 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.

```
#include <stdio.h>
#include <math.h>

int main()
{
	char name[5][20];
	int elective[20];
	int i, j, x, ctr1, ctr2, ctr3;
	ctr1 = ctr2 = ctr3 =0;
	for (i = 0; i < 5; i++)
	{
		printf("Enter name of student %d\n", i + 1);
		scanf("%s", name[i]);
		printf("CHOOSE 1 CHOICE OF ELECTIVES\n");
		printf("1. Internet of Things\n");
		printf("2. Advanced Java and J2EE\n");
		printf("3. Advanced Data Structures\n");
		printf("Enter your choice!\n");
		scanf("%d", &elective[i]);
	}
	printf("CHOOSE 1 CHOICE OF ELECTIVES\n");
	printf("1. Internet of Things\n");
	printf("2. Advanced Java and J2EE\n");
	printf("3. Advanced Data Structures\n");
	printf("Enter the elective for which you want\nto display the student :\n");
	scanf("%d", &x);
	for(i = 0; i < 5; i++)
	{
		if(elective[i] == x)
		{
			printf("Name %d : %s\n",i+1, name[i]);
		}
	}
```

```
for(i = 0; i < 5; i++)
{
	if (elective[i] == 1)
		ctr1++;
	else if (elective[i] == 2)
		ctr2++;
	else
		ctr3++;
}
printf("The number of students in Elective 1 are : %d\n", ctr1);
printf("The number of students in Elective 2 are : %d\n", ctr2);
printf("The number of students in Elective 3 are : %d\n", ctr3);

if (ctr1 < 2)
{
	printf("Course 1 has been floated!\n");
	for(i=0; i < 5; i++)
	{
		if(elective[i] == 1)
		{
			printf("2.Advanced Java and J2EE\n");
			printf("3.Advanced Data Structures\n");
			printf("Enter your choice!\n");
			scanf("%d", &elective[i]);
		}
	}
}
else if (ctr2 < 2)
{
	printf("Course 2 has been floated!\n");
	for(i=0; i < 5; i++)
	{
		if(elective[i] == 2)
		{
			printf("1.Internet of Things\n");
			printf("3.Advanced Data Structures\n");
			printf("Enter your choice!\n");
			scanf("%d", &elective[i]);
		}
	}
}
else
{
	printf("Course 3 has been floated!\n");
	for(i=0; i < 5; i++)
	{
```

```
                if(elective[i] == 3)
                {
                        printf("1.Internet of Things\n");
                        printf("2.Advanced Java and J2EE\n");
                        printf("Enter your choice!\n");
                        scanf("%d", &elective[i]);
                }
        }
}
ctr1 = ctr2 = ctr3 =0;
for(i = 0; i < 5; i++)
{
        if (elective[i] == 1)
                ctr1++;
        else if (elective[i] == 2)
                ctr2++;
        else
                ctr3++;
}
printf("The number of students in Elective 1 are : %d\n", ctr1);
printf("The number of students in Elective 2 are : %d\n", ctr2);
printf("The number of students in Elective 3 are : %d\n", ctr3);

if (ctr1 != 0)
{
        printf("-THE STUDENTS IN ELECTIVE 1-\n");
        for(i = 0; i < 5; i++)
        {
                if(elective[i] == 1)
                        printf("Name %d : %s\n", i+1,name[i]);
        }
}
if (ctr2 != 0)
{
        printf("-THE STUDENTS IN ELECTIVE 2-\n");
        for(i = 0; i < 5; i++)
        {
                if(elective[i] == 2)
                        printf("Name %d : %s\n", i+1, name[i]);
        }
}
if (ctr3 != 0)
{
        printf("-THE STUDENTS IN ELECTIVE 3-\n");
        for(i = 0; i < 5; i++)
        {
```

```
                        if(elective[i] == 3)
                                printf("Name %d : %s\n", i+1, name[i]);
                }
        }
        return 0;
}
```

OUTPUT

```
Enter name of student 1
hamid
CHOOSE 1 CHOICE OF ELECTIVES
1. Internet of Things
2. Advanced Java and J2EE
3. Advanced Data Structures
Enter your choice!
3
Enter name of student 2
romeo
CHOOSE 1 CHOICE OF ELECTIVES
1. Internet of Things
2. Advanced Java and J2EE
3. Advanced Data Structures
Enter your choice!
3
Enter name of student 3
julliete
CHOOSE 1 CHOICE OF ELECTIVES
1. Internet of Things
2. Advanced Java and J2EE
3. Advanced Data Structures
Enter your choice!
2
Enter name of student 4
cesar
CHOOSE 1 CHOICE OF ELECTIVES
1. Internet of Things
2. Advanced Java and J2EE
3. Advanced Data Structures
Enter your choice!
1
Enter name of student 5
anil
CHOOSE 1 CHOICE OF ELECTIVES
1. Internet of Things
2. Advanced Java and J2EE
3. Advanced Data Structures
Enter your choice!
3
CHOOSE 1 CHOICE OF ELECTIVES
```

```
anil
CHOOSE 1 CHOICE OF ELECTIVES
1. Internet of Things
2. Advanced Java and J2EE
3. Advanced Data Structures
Enter your choice!
3
CHOOSE 1 CHOICE OF ELECTIVES
1. Internet of Things
2. Advanced Java and J2EE
3. Advanced Data Structures
Enter the elective for which you want
to display the student :
3
Name 1 : hamid
Name 2 : romeo
Name 5 : anil
The number of students in Elective 1 are : 1
The number of students in Elective 2 are : 1
The number of students in Elective 3 are : 3
Course 1 has been floated!
2.Advanced Java and J2EE
3.Advanced Data Structures
Enter your choice!
```