Week 2

SUDESHNA BHUSHAN, 1BM19CS189

3.
```
class week2_3 {
public static void main (String args []) {
int a [] [] = new int [4] [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 ();
}
}
}
```

SUDESHNA BHUSHAN, 1BM19CS189

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100 - 80 — A
80 - 60 - B
60 - 40 - C
40 - 20 - E
20 - 0 - F

④
```
class week2_4
{
public static void main (String args[])
{
float a= 49.0; b= 32.0; c= 27.0;
float a1 = 72.0; b1 = 89.0; c1 = 92.0;
printf ("The grade marks of student");
printf ("CIE grade marks");
if (a >=100 && a >= 80)
(b >=100 && b <=100
 System.out.print ("A");
else if ( a <= 80 && a >= 60)
System.out.println ("B");
else if (a <= 60 && a >= 40)
System.out.println ("C");
else if (a <=40 && a >= 20)
System.out.println ("E");
else if (a < 20 && a < 0)
System.out.println ("F");
}
}
```

(5)

```
class week2_5
{
  public static void main (String args[])
  {
    int i=0;
    int num=0;
    String palindrome primeNumbers = "";
    for(i=1; i<=100; i++)
    {
      int counter=0;
      for(num=i; num>=1; num--)
      {
        if(i%num==0)
        {
          counter = counter+1;
        }
      }
      if(counter==2)
      {
        primeNumbers = primeNumbers + i + " ";
      }
    }
    System.out.println("Prime numbers from 1 to
                        100 are :");
    System.out.println(primeNumbers);
  }
}
```

⑥
```
#include <stdio.h>
#include <math.h>
void main ()
{
   float area, volume, h, rad;
   int choice, y=0, a;
   while (y==0)
   {
    printf ("1 for area and volume of
              cylinder \n");
   printf ("2 for area and volume of cone \n");
   printf ("3 for area and volume of sphere \n");
   printf ("Input your choice:");
   scanf ("%d", &choice);
   switch (choice)
   {
      case 1:
       printf ("Enter radius and height:");
       scanf ("%f", &rad);
       scanf ("%f", &h);
       area = 2 * 3.14 * rad * (rad+h);
       volume = 3.14 * rad * rad * h;
       break;
     case 2:
       printf ("Enter radius and height:");
       scanf ("%f", &rad);
       scanf ("%f", &h);
       volume = (3.14 * rad * rad * h) / 3;
```

```
area = (22/7) * rad * (rad + sqrt (rad * rad + h*h));
break;

case 3:
printf ("Enter radius and height : ");
scanf ("%f", &rad);
scanf ("%f", &h);
volume = (4*3.14 * rad * rad * rad) /3;
area = 4*3.14 * rad * rad;
break;
default:
printf ("option not available \n");
break;
}
printf ("The area is : %f \n", area);
printf ("The volume is : %f \n", volume);
printf ("\n Enter 0 to exit and 1 to continue \n");
scanf ("%d", &a);
if (a==0)
{
y=1;
}
else if (a==1)
{
y=0;
}
}
}
```

⑦
```
#include <stdio.h>
#include <stdlib.h>
int main ()
{
  int a, stu[1000], n, s1[500], s2[500], i,
  i1=0, i2=0; i3=0, a1, a2, a3, j, k, l, x, y, z,
  x1, y1, z1, x2, y2, z2;
  printf ("Enter number of students: ");
  scanf ("%d", &n);
  for (i=0; i<n; i++)
  {
    printf ("\n\n Enter your id: ");
    scanf ("%d", &stu[i]);
    printf ("1-Internet of things \n 2-Advanced
    Java and J2EE \n 3-Advanced Data Structures
    \n");
    printf (" Choose from the above electives: ");
    scanf ("%d", &a);
    switch (a)
    {
      case 1:
      s1[i1] = stu[i];
      i1++;
      printf ("Number of students for elective
       1 till now : %d", i1);
      break;

      case 2:
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```
s2[i2] = stu[i];
i2++;
printf("Number of students for elective 2 till
now : %d", i2);
break;

case 3:
s3[i3] = stu[i];
i3++;
printf("Number of students for elective 3 till
now : %d", i3);
break;

default:
printf("Enter valid choice");
break;
}
}

printf("\n Total number of students in each
elective is \n 1 - %d \n 2 - %d \n 3 - %d \n", i1, i2, i3);
printf("\n Students in elective 1 are -");
for(x=0; x<i1; x++)
{
   printf("%d \n", s1[x]);
}
printf("\n Students in elective 2 are -");
for(y=0; y<i2; y++)
{
```

```
printf("%d \n", s2[y]);
}
}
printf("\n Students in elective 3 are-");
for(z=0; z<i3; z++)
{
printf("%d \n", s3[z]);
}
if(i1<30)
{
printf("\n Internet of things will not be floated due to lack of students \n Please choose from the remaining two electives-");
for(j=0; j<i1; j++)
{
printf("Student with id %d please choose", s1[j]);
printf("\n 1-Advanced Java and J2EE \n 2-Advanced Data Structures \n");
scanf("%d", &a1);
switch(a1)
{
case 1:
s2[i2] = s1[j];
i2++;
break;
case 2:
s2[i3] = s1[j];
i3++;
break;
```

```
default:
  printf ("Enter valid choice");
  break;
}
}
printf ("\n Now total students in each elective
        \n 1 - %d \n 2 - %d \n", i2, i3);
printf ("\n Students in elective 1 are -");
for (y2=0; y2<i2; y2++)
{
  printf ("%d \n", s2[y2]);
}
printf ("\n Students in elective 2 are - ");
for (z1=0; z1<i3; z1++)
{
  printf ("%d \n", s3[z]);
}
}
else if (i2<30)
{
  printf ("\n Advanced Java and J2EE will not
  be floated due to lack of students \n Please
  choose from the remaining two electives - ");
  for (k=0; k<i1; k++)
  {
    printf ("Student with id %d please choose",
            s2[k]);
    printf ("\n 1 - Internet of things \n 2 -
            Advanced Data structures \n");
```

```
scanf ("%d", &a2);
switch (a2)
{
   case 1:
    s1[i1] = s2[k];
    i1++;
    break;
   case 2:
    s3[i3] = s2[k];
    i3++;
    break;
   default:
   printf ("Enter valid choice");
   break;
   }
}
printf ("\n Now total students in each elective
          \n1 - %d \n2 - %d \n", i1, i3);
printf ("\n Students in elective 1 are -");
for (x2=0; x2<i1; x2++)
{
   printf ("%d \n", s1[x2]);
}
   printf ("\n Students in elective 2 are -");
   for (z2=0; z2<i3; z2++)
   {
    printf ("%d \n", s3[z2]);
   }
}
```

```
else if (i3 < 30)
{
 printf ("\n Advanced Data Structures will not
          be floated - - - - ");
 for (l=0 ; l < i1 ; l++)
 {
   printf ("Student with id %d please choose",
            s3 [l]);
   printf ("\n 1-Internet of things \n 2-Advanced Java
            and J2EE \n");
   scanf ("%d", &a3)
   switch (a3)
   {
      case 1:
        s1 [i1] = s3 [l];
        i1 ++;
        break;
      case 2:
        s2 [i2] = s2 [l];
        i2 ++;
        break;
      default:
        printf ("Enter valid choice");
        break;
   }
 }
 printf ("\n Now total number of students
          in each elective \n 1- %d \2- %d \n", i1, i2);
 printf ("\n Students in elective 1 are - ");
```

```
for (x1=0; x1<i1; x1++)
{
  printf ("%d\n", s1[x1]);
}
printf ("\n Students in elective 2 are -");
for (y1=0; y1<i2; y1++)
{
  printf ("%d\n", s2[y1]);
}
}
return 0;
}
```