

# WEEK – 2 PROGRAMMING ASSIGNMENTS

## PROGRAM – 1

**Input :**

```
1  #include <stdio.h>
2
3  int main()
4  {
5      int i, j, n;
6      int num;
7      num = 1;
8      printf("Enter the value of n:\n");
9      scanf("%d", &n);
10     for(i = 0; i < n; i++)
11     {
12         for(j = 0; j <= i; j++)
13         {
14             printf("%d ", num);
15             num += 1;
16         }
17         printf("\n");
18     }
19     return 0;
20 }
```

**Output :**

```
Enter the value of n:
5
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15

...Program finished with exit code 0
Press ENTER to exit console.
```

## PROGRAM – 2

### Input :

```
1  #include <stdio.h>
2  #include <math.h>
3
4  int main()
5  {
6      int cie, see, sum;
7      sum = 0;
8      char grade;
9      printf("Enter your CIE marks (out of 50):\n");
10     scanf("%d", &cie);
11     printf("Enter your SEE marks (out of 100):\n");
12     scanf("%d", &see);
13     sum = cie + (see / 2);
14     if ((sum >= 90) && (sum <= 100))
15         grade = 'S';
16     else if ((sum >= 80) && (sum <= 89))
17         grade = 'A';
18     else if ((sum >= 70) && (sum <= 79))
19         grade = 'B';
20     else if ((sum >= 60) && (sum <= 69))
21         grade = 'C';
22     else if ((sum >= 50) && (sum <= 59))
23         grade = 'D';
24     else if ((sum >= 40) && (sum <= 49))
25         grade = 'E';
26     else
27         grade = 'F';
28     printf("You achieved %c grade\n", grade);
29     return 0;
30 }
```

### Output :

```
Enter your CIE marks (out of 50):
45
Enter your SEE marks (out of 100):
100
You achieved S grade

...Program finished with exit code 0
Press ENTER to exit console.
```

## **PROGRAM – 3**

### **Input :**

```
1  #include <stdio.h>
2  #include <math.h>
3
4  int main()
5  {
6      int a, b, n, i, j;
7      int flag;
8      printf("Enter the first number:\n");
9      scanf("%d", &a);
10     printf("Enter the second number:\n");
11     scanf("%d", &b);
12     if (a < b)
13     {
14         printf("The prime numbers from %d to %d are : \n", a, b);
15         for(i = a; i <= b; i++)
16         {
17             flag = 0;
18             for(j = 2; j <= i/2; j++)
19             {
20                 if((i % j) == 0)
21                 {
22                     flag = 1;
23                     continue;
24                 }
25             }
26             if (flag != 1)
27                 printf("%d\n", i);
28         }
29     }
30     else
31         printf("The First number should be lesser than the second\n");
32     return 0;
33 }
```

### **Output :**

```
Enter the first number:
5
Enter the second number:
15
The prime numbers from 5 to 15 are :
5
7
11
13

...Program finished with exit code 0
Press ENTER to exit console. □
```

## PROGRAM – 4

### Input :

```
1 void cylinder();
2 void cone();
3 void sphere();
4
5 #include <stdio.h>
6 #include <math.h>
7
8 int main()
9 {
10     int choice;
11     do
12     {
13         printf("-----MENU-----\n");
14         printf("1. Cylinder\n");
15         printf("2. Cone\n");
16         printf("3. Sphere\n");
17         printf("4. EXIT\n");
18         printf("Enter the number of your choice :\n");
19         scanf("%d", &choice);
20         switch(choice)
21         {
22             case 1:
23                 cylinder();
24                 break;
25             case 2:
26                 cone();
27                 break;
28             case 3:
29                 sphere();
30                 break;
31             case 4: printf("EXITING....\n");
32                     break;
33             default:
34                 printf("Enter the correct number from the list!!\n");
35         }
36     }
37     while(choice != 4);
38     return 0;
39 }
40
```

```
41 void cylinder()
42 {
43     float pi = 3.1415;
44     float r, h, area, vol;
45     printf("Enter the radius of the cylinder\n");
46     scanf("%f", &r);
47     printf("Enter the height of the cylinder\n");
48     scanf("%f", &h);
49     area = (2 * pi * r * h) + (2 * pi * (r * r));
50     vol = (pi * (r * r) * h);
51     printf("The area of the cylinder is : %0.3f\n", area);
52     printf("The volume of the cylinder is : %0.3f\n", vol);
53 }
54
55 void cone()
56 {
57     float pi = 3.1415;
58     float r, h, area, vol;
59     printf("Enter the radius of the cone\n");
60     scanf("%f", &r);
61     printf("Enter the height of the cone\n");
62     scanf("%f", &h);
63     area = (pi * r) * (r + sqrt((r * r) + (h * h)));
64     vol = (pi * (r * r) * h) / 3;
65     printf("The area of the cone is : %0.3f\n", area);
66     printf("The volume of the cone is : %0.3f\n", vol);
67 }
68
69 void sphere()
70 {
71     float pi = 3.1415;
72     float r, area, vol;
73     printf("Enter the radius of the sphere\n");
74     scanf("%f", &r);
75     area = 4 * pi * (r * r);
76     vol = (4 / 3) * pi * (r * r * r);
77     printf("The area of the sphere is : %0.3f\n", area);
78     printf("The volume of the sphere is : %0.3f\n", vol);
79 }
```

## Output :

```
-----MENU-----
1. Cylinder
2. Cone
3. Sphere
4. EXIT
Enter the number of your choice :
2
Enter the radius of the cone
3
Enter the height of the cone
5
The area of the cone is : 83.227
The volume of the cone is : 47.123
-----MENU-----
1. Cylinder
2. Cone
3. Sphere
4. EXIT
Enter the number of your choice :
4
EXITING....

...Program finished with exit code 0
Press ENTER to exit console.
```

## PROGRAM – 5

**Input :** (Taken input of 5 students and floated the course if it has less than 2 students in it.)

```
1  #include <stdio.h>
2  #include <math.h>
3
4  int main()
5  {
6      char name[5][20];
7      int ele[20];
8      int i, j, x, ctr1, ctr2, ctr3;
9      ctr1 = ctr2 = ctr3 = 0;
10     for (i = 0; i < 5; i++)
11     {
12         printf("Enter name of student %d\n", i + 1);
13         scanf("%s", name[i]);
14         printf("---CHOICE OF ELECTIVES---\n");
15         printf("1. Internet of Things\n");
16         printf("2. Advanced Java and J2EE\n");
17         printf("3. Advanced Data Structures\n");
18         printf("Enter your choice!\n");
19         scanf("%d", &ele[i]);
20     }
21     printf("---CHOICE OF ELECTIVES---\n");
22     printf("1. Internet of Things\n");
23     printf("2. Advanced Java and J2EE\n");
24     printf("3. Advanced Data Structures\n");
25     printf("Enter the elective for which you want\nto display the students :\n");
26     scanf("%d", &x);
27     printf("-----\n");
28     for(i = 0; i < 5; i++)
29     {
30         if(ele[i] == x)
31         {
32             printf("Name %d : %s\n", i+1, name[i]);
33         }
34     }
35     for(i = 0; i < 5; i++)
36     {
37         if (ele[i] == 1)
38             ctr1++;
39         else if (ele[i] == 2)
40             ctr2++;
41         else
42             ctr3++;
43     }
```

```

45 printf("\n");
46 printf("The number of students in Elective 1 are : %d\n", ctr1);
47 printf("The number of students in Elective 2 are : %d\n", ctr2);
48 printf("The number of students in Elective 3 are : %d\n", ctr3);
49 printf("\n");
50
51 if (ctr1 < 2)
52 {
53     printf("Course 1 has been floated!\n");
54     for(i=0; i < 5; i++)
55     {
56         if(ele[i] == 1)
57         {
58             printf("2. Advanced Java and J2EE\n");
59             printf("3. Advanced Data Structures\n");
60             printf("Enter your choice!\n");
61             scanf("%d", &ele[i]);
62         }
63     }
64 }
65 else if (ctr2 < 2)
66 {
67     printf("Course 2 has been floated!\n");
68     for(i=0; i < 5; i++)
69     {
70         if(ele[i] == 2)
71         {
72             printf("1. Internet of Things\n");
73             printf("3. Advanced Data Structures\n");
74             printf("Enter your choice!\n");
75             scanf("%d", &ele[i]);
76         }
77     }
78 }
79 else
80 {
81     printf("Course 3 has been floated!\n");
82     for(i=0; i < 5; i++)
83     {
84         if(ele[i] == 3)
85     {

```

```

86         printf("1. Internet of Things\n");
87         printf("2. Advanced Java and J2EE\n");
88         printf("Enter your choice!\n");
89         scanf("%d", &ele[i]);
90     }
91 }
92 }
93 ctr1 = ctr2 = ctr3 = 0;
94 for(i = 0; i < 5; i++)
95 {
96     if (ele[i] == 1)
97         ctr1++;
98     else if (ele[i] == 2)
99         ctr2++;
100     else
101         ctr3++;
102 }
103
104 printf("\n");
105 printf("The number of students in Elective 1 are : %d\n", ctr1);
106 printf("The number of students in Elective 2 are : %d\n", ctr2);
107 printf("The number of students in Elective 3 are : %d\n", ctr3);
108 printf("\n");
109
110 if (ctr1 != 0)
111 {
112     printf("---THE STUDENTS IN ELECTIVE 1---\n");
113     for(i = 0; i < 5; i++)
114     {
115         if(ele[i] == 1)
116             printf("Name %d : %s\n", i+1, name[i]);
117     }
118 }
119 if (ctr2 != 0)
120 {
121     printf("---THE STUDENTS IN ELECTIVE 2---\n");
122     for(i = 0; i < 5; i++)
123     {
124         if(ele[i] == 2)
125             printf("Name %d : %s\n", i+1, name[i]);
126     }
127 }

```

```

128 if (ctr3 != 0)
129 {
130     printf("---THE STUDENTS IN ELECTIVE 3---\n");
131     for(i = 0; i < 5; i++)
132     {
133         if(ele[i] == 3)
134             printf("Name %d : %s\n", i+1, name[i]);
135     }
136 }
137 return 0;
138 }

```

## Output :

```
Enter name of student 1
john
---CHOICE OF ELECTIVES---
1. Internet of Things
2. Advanced Java and J2EE
3. Advanced Data Structures
Enter your choice!
1
Enter name of student 2
ram
---CHOICE OF ELECTIVES---
1. Internet of Things
2. Advanced Java and J2EE
3. Advanced Data Structures
Enter your choice!
2
Enter name of student 3
jane
---CHOICE OF ELECTIVES---
1. Internet of Things
2. Advanced Java and J2EE
3. Advanced Data Structures
Enter your choice!
3
Enter name of student 4
adam
```

```
---CHOICE OF ELECTIVES---
1. Internet of Things
2. Advanced Java and J2EE
3. Advanced Data Structures
Enter your choice!
2
Enter name of student 5
mary
---CHOICE OF ELECTIVES---
1. Internet of Things
2. Advanced Java and J2EE
3. Advanced Data Structures
Enter your choice!
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 students :
2
-----
Name 2 : ram
Name 4 : adam
```

```
The number of students in Elective 1 are : 2
The number of students in Elective 2 are : 2
The number of students in Elective 3 are : 1

Course 3 has been floated!
1. Internet of Things
2. Advanced Java and J2EE
Enter your choice!
2

The number of students in Elective 1 are : 2
The number of students in Elective 2 are : 3
The number of students in Elective 3 are : 0

---THE STUDENTS IN ELECTIVE 1---
Name 1 : john
Name 5 : mary
---THE STUDENTS IN ELECTIVE 2---
Name 2 : ram
Name 3 : jane
Name 4 : adam
```