WEEK – 2 PRAGRAMMING ASSIGNMENTS

PROGRAM – 1

Input :

```c
#include <stdio.h>

int main()
{
    int i, j, n;
    int num;
    num = 1;
    printf("Enter the value of n:\n");
    scanf("%d", &n);
    for(i = 0; i < n; i++)
    {
        for(j = 0; j <= i; j++)
        {
            printf("%d  ", num);
            num += 1;
        }
        printf("\n");
    }
    return 0;
}
```

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 :

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

int main()
{
    int cie, see, sum;
    sum = 0;
    char grade;
    printf("Enter your CIE marks (out of 50):\n");
    scanf("%d", &cie);
    printf("Enter your SEE marks (out of 100):\n");
    scanf("%d", &see);
    sum = cie + (see / 2);
    if ((sum >= 90) && (sum <= 100))
        grade = 'S';
    else if ((sum >= 80) && (sum <= 89))
        grade = 'A';
    else if ((sum >= 70) && (sum <= 79))
        grade = 'B';
    else if ((sum >= 60) && (sum <= 69))
        grade = 'C';
    else if ((sum >= 50) && (sum <= 59))
        grade = 'D';
    else if ((sum >= 40) && (sum <= 49))
        grade = 'E';
    else
        grade = 'F';
    printf("You achieved %c grade\n", grade);
    return 0;
}
```

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 :

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

int main()
{
    int a, b, n, i, j;
    int flag;
    printf("Enter the first number:\n");
    scanf("%d", &a);
    printf("Enter the second number:\n");
    scanf("%d", &b);
    if (a < b)
    {
        printf("The prime numbers from %d to %d are : \n", a, b);
        for(i = a; i <= b; i++)
        {
            flag = 0;
            for(j = 2; j <= i/2; j++)
            {
                if((i % j) == 0)
                {
                    flag = 1;
                    continue;
                }
            }
            if (flag != 1)
                printf("%d\n", i);
        }
    }
    else
        printf("The First number should be lesser than the second\n");
    return 0;
}
```

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 :

```c
void cylinder();
void cone();
void sphere();

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

int main()
{
    int choice;
    do
    {
        printf("-----MENU-----\n");
        printf("1. Cylinder\n");
        printf("2. Cone\n");
        printf("3. Sphere\n");
        printf("4. EXIT\n");
        printf("Enter the number of your choice :\n");
        scanf("%d", &choice);
        switch(choice)
        {
            case 1:
                cylinder();
                break;
            case 2:
                cone();
                break;
            case 3:
                sphere();
                break;
            case 4: printf("EXITING....\n");
                    break;
            default:
                printf("Enter the correct number from the list!!\n");
        }
    }
    while(choice != 4);
    return 0;
}
```

```c
void cylinder()
{
    float pi = 3.1415;
    float r, h, area, vol;
    printf("Enter the radius of the cylinder\n");
    scanf("%f", &r);
    printf("Enter the height of the cylinder\n");
    scanf("%f", &h);
    area = (2 * pi * r * h) + (2 * pi * (r * r));
    vol = (pi * (r * r) * h);
    printf("The area of the cylinder is : %0.3f\n", area);
    printf("The volume of the cylinder is : %0.3f\n", vol);
}

void cone()
{
    float pi = 3.1415;
    float r, h, area, vol;
    printf("Enter the radius of the cone\n");
    scanf("%f", &r);
    printf("Enter the height of the cone\n");
    scanf("%f", &h);
    area = (pi * r) * (r + sqrt((r * r) + (h * h)));
    vol = (pi * (r * r) * h) / 3;
    printf("The area of the cone is : %0.3f\n", area);
    printf("The volume of the cone is : %0.3f\n", vol);
}

void sphere()
{
    float pi = 3.1415;
    float r, area, vol;
    printf("Enter the radius of the sphere\n");
    scanf("%f", &r);
    area = 4 * pi * (r * r);
    vol = (4 / 3) * pi * (r * r * r);
    printf("The area of the sphere is : %0.3f\n", area);
    printf("The volume of the sphere is : %0.3f\n", vol);
}
```

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.)

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

int main()
{
    char name[5][20];
    int ele[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("---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", &ele[i]);
    }
    printf("---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 students :\n");
    scanf("%d", &x);
    printf("------------\n");
    for(i = 0; i < 5; i++)
    {
        if(ele[i] == x)
        {
            printf("Name %d : %s\n",i+1, name[i]);
        }
    }
    for(i = 0; i < 5; i++)
    {
        if (ele[i] == 1)
            ctr1++;
        else if (ele[i] == 2)
            ctr2++;
        else
            ctr3++;
    }
```

```
    printf("\n");
    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);
    printf("\n");

    if (ctr1 < 2)
    {
        printf("Course 1 has been floated!\n");
        for(i=0; i < 5; i++)
        {
            if(ele[i] == 1)
            {
                printf("2. Advanced Java and J2EE\n");
                printf("3. Advanced Data Structures\n");
                printf("Enter your choice!\n");
                scanf("%d", &ele[i]);
            }
        }
    }
    else if (ctr2 < 2)
    {
        printf("Course 2 has been floated!\n");
        for(i=0; i < 5; i++)
        {
            if(ele[i] == 2)
            {
                printf("1. Internet of Things\n");
                printf("3. Advanced Data Structures\n");
                printf("Enter your choice!\n");
                scanf("%d", &ele[i]);
            }
        }
    }
    else
    {
        printf("Course 3 has been floated!\n");
        for(i=0; i < 5; i++)
        {
            if(ele[i] == 3)
            {
                printf("1. Internet of Things\n");
                printf("2. Advanced Java and J2EE\n");
                printf("Enter your choice!\n");
                scanf("%d", &ele[i]);
            }
        }
    }
    ctr1 = ctr2 = ctr3 =0;
    for(i = 0; i < 5; i++)
    {
        if (ele[i] == 1)
            ctr1++;
        else if (ele[i] == 2)
            ctr2++;
        else
            ctr3++;
    }

    printf("\n");
    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);
    printf("\n");

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

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
```

<---------->