214189E – SENARATHNA G.G.P.C.

Exercise:

01) a)

```c
#include <stdio.h>

int main() {
    int i = 1; // initialization.
    while(i <= 10) { // condition.
        printf("%d\n", i);
        i++;  // increment value.
    }
    return 0;
}
```

b)

```c
#include <stdio.h>

int main() {
    int i = 10; // initialization.
    while(i > 0) { // condition.
        printf("%d\n", i);
        i--; // decrement.
    }
}
```

c)

```c
#include <stdio.h>

int main() {
    int i = 1; // initialization.
    while(i < 10) { // condition.
        printf("%d\n", i);
        i += 2; // increment by 2;
    }
}
```

`

d)

```c
#include <stdio.h>

int main() {
    int i = 1; // initialization.
    while(i <= 52) { // condition.
        printf("%d\n", i);
        i += 3; // increment value by 3.
    }
}
```

e)

```c
#include <stdio.h>

int main() {
    int i = 2; // initialization.
    while(i <= 33) { // condition.
        printf("%d\n", i);
        i = i*2 - 1; // modify value.
    }
}
```

f)

```c
#include <stdio.h>

int main() {
    int i = 3;
    while(i < 100) {
        printf("%d\n", i);
        i += 2;
    }
}
```

g)

```c
#include <stdio.h>

int main() {
    int i = 2; // initialization.
    while(i < 100) { // condition.
        printf("%d\n", i);
        i += 2; // update value.
    }
}
```

h)

```c
#include <stdio.h>

int main() {
    int i = 3; // initialization.
    while(i < 100) { // condition.
        printf("%d\n", i);
        i += 3; // modify value.
    }
}
```

02)

```c
#include <stdio.h>

int main() {
    int count,i = 1; // initialization.
    while(i <= 20) { // condition.
        printf("%d\t", i);
        i++; // modify i value.
        count++;
        if(count % 5 == 0) {
            printf("\n");
        }
    }
    return 0;
}
```

03)

```c
#include <stdio.h>

int main() {
    int i = 2,sum; // initialization.
    while(i <= 50) { // condition.
        sum = sum + i;
        i += 2; // update value.
    }
    printf("%d", sum);
}
```

04)

```c
#include <stdio.h>

int main() {
    int i = 1,product = 1; // initialization.
    while(i < 30) { // condition.
        product = product * i;
        i += 2; // modify value.
    }
    printf("%d", product);
    return 0;
}
```

05)

```c
#include <stdio.h>

int main() {
    int i = 3,sum; // initialization
    while(i < 99) { // condition.
        sum = sum + i;
        i += 2; // modify i value.
    }
    printf("%d", sum);
}
```

06) a)

```c
#include <stdio.h>

int main() {
    int i = 1,sum; // initialization.
    while(i <= 10) { // condition.
        sum = sum + i;
        i++; // increment.
    }
    printf("%d", sum);
}
```

b)

```c
#include <stdio.h>

int main() {
    int i = 1,mul = 1; // initialization.
    while(i <= 10) { // condition.
        mul = mul * i;
        i++; // increment.
    }
    printf("%d", mul);
}
```

c)

```c
#include <stdio.h>

int main() {
    int i = 2,count; // initialization.
    while(i <= 100) { // condition.
        i += 2; // update i value.
        count++;
    }
    printf("%d", count);
}
```

d)

```c
#include <stdio.h>

int main() {
    int i = 1,count; // initialization.
    while(i < 100) { // condition.
        i += 2; // modify i value.
        count++;
    }
    printf("%d", count);
}
```

07)

```c
#include <stdio.h>

int main() {
    char name[30]; // declare name variable by string.
    char id[30]; // declare id variable by string.
    int duration; // declare duration variable by integer.

    printf("Input your name : \n"); // output function.
    scanf("%s", &name); // input function.
    printf("Input your id number : \n");
    scanf("%s", &id);
    printf("Input duration time : \n");
    scanf("%d", &duration);

    int n = duration; // now, I want to declare n variable by integer.
    float x = 200,fees,tot_fees,ann_fees; // x means first year fees,fees
means amount accumulated in future years,tot_fees means total fees ans
ann_fees means annual fees.
    while(duration > 1) { // condition statement.
        x = x * 1.05;
        fees = fees + x;
        duration--; // modify statement.
    }
    tot_fees = fees + 200;
    ann_fees = tot_fees / n; // n means duration time.
    printf("Annual course fees is : $ %f and Total course fees is : $ %f",
ann_fees,tot_fees);
}
```

08)

```c
#include <stdio.h>

int main() {
    float f_number,s_number,Answer;
    char operator,ch;

    do {
        printf("Input the expression : \n");
        scanf("%f%c%f", &f_number,&operator,&s_number);

        switch(operator) {
            case '+':
                Answer = f_number + s_number;
                break;
            case '-':
                Answer = f_number - s_number;
                break;
            case '*':
                Answer = f_number * s_number;
                break;
            case '/':
                Answer = f_number / s_number;
                break;
        }
        printf("Answer = %f\n", Answer);
```

```
        printf("Do You Want to Try It Again(y/n)?");
        scanf(" %c", &ch);

    }while(ch == 'y');
    if(ch == 'n')
        printf("Goodbye");
    else
        printf("Invalid character.");
    return 0;
}
```

09)

```
#include <stdio.h>

int main() {
    float g_salary,e_salary;
    do {
        printf("Input the salesperson's gross sales for the last week : \n");
        scanf("%f", &g_salary);

        if(g_salary == -1) {
            break;
        }else {
            e_salary = 200.00 + g_salary * 0.09;
            printf("salesperson's earnings : %f\n", e_salary);
        }
    }while(1);
}
```

10)

```
#include <stdio.h>

int main() {
    int num,rev;
    printf("Enter the number : ");
    scanf("%d", &num);

    while(num > 0) {
        rev = num % 10;
        printf("%d", rev);
        num = num / 10;
    }
    return 0;
}
```

11)

```
#include <stdio.h>

int main() {
    int num,count,rev,mul = 1,sum,cnt;
    printf("Enter the number : ");
    scanf("%d", &num);

    int n = num;
    while(n != 0) {
```

```
        n = n / 10;
        count++;
    }
    cnt = count;
    n = num;
    while(n != 0) {
        rev = n % 10;
        while(cnt != 0) {
            mul = mul * rev;
            cnt--;
        }
        sum = sum + mul;
        cnt = count;
        n = n / 10;
        mul = 1;
    }
    if(sum == num) {
        printf("%d is an Armstrong Number.", num);
    }else {
        printf("%d is not an Armstrong Number.", num);
    }
    return 0;
}
```

12)

```
#include <stdio.h>

int main() {
    int num1,num2,R;
    printf("Enter two numbers : ");
    scanf("%d%d", &num1,&num2);

    if(num1 < num2) {
        while(num1 != 0) {
            R = num2 % num1;
            num2 = num1;
            num1 = R;
        }
        printf("%d", num2);
    }else {
        while(num2 != 0) {
            R = num1 % num2;
            num1 = num2;
            num2 = R;
        }
        printf("%d", num1);
    }
}
```

13)

Method – 01,

```c
#include <stdio.h>

int main() {
    int num1,num2,x;
    printf("Enter two numbers : ");
    scanf("%d%d", &num1,&num2);

    if(num1 < num2) {
        if(num2 % num1 == 0) {
            printf("%d", num2);
        }else {
            x = num1 * num2;
            printf("%d", x);
        }
    }else {
        if(num1 % num2 == 0) {
            printf("%d", num1);
        }else {
            x = num1 * num2;
            printf("%d", x);
        }
    }
}
```

Method - 02,

```c
#include <stdio.h>

int main() {
    int num1,num2,p = 0,q = 0,x = 0,y = 0;
    printf("Input two numbers : \n");
    scanf("%d%d", &num1,&num2);

    p = num1;
    q = num2;
    if(p > q) {
        if(p % q == 0) {
            printf("Lowest Common Multiple : %d", p);
        }else {
            do {
                p++;
                x = p%num1;
                y = p%num2;
            }while(x != y);
            printf("Lowest Common Multiple : %d", p);
        }
    }else if(p < q) {
        do {
            q++;
            x = q%num1;
            y = q%num2;
        }while(x != y);
        printf("Lowest Common Multiple : %d", q);
    }else {
```

```
        printf("Lowest Common Multiple : %d", p);
    }
}
```

14)

```
#include <stdio.h>

int main() {
    int num,count;
    printf("Input the number : ");
    scanf("%d", &num);

    while(num != 0) {
        num = num/10;
        count++;
    }
    printf("Number of Digits : %d", count);
}
```

15)

```
#include <stdio.h>

int main() {
    int num,pow,x = 1;
    printf("Enter the number and power's number : ");
    scanf("%d%d", &num,&pow);

    while(pow > 0) {
        x = x * num;
        pow--;
    }
    printf("%d", x);
}
```

16)

```
#include <stdio.h>

int main() {
    int num,rev,sum;
    printf("Input a number : ");
    scanf("%d", &num);

    int n = num;
    while(num > 0) {
        rev = num % 10;
        sum = (sum * 10) + rev;
        num = num / 10;
    }
    if(n == sum)
        printf("Palindrome Number");
    else
        printf("Not Palindrome Number");
}
```

17)

Method – 01,

```c
#include <stdio.h>
int main() {
    int num,count1 = 0,count2 = 0,count3 = 0,sum1 = 0,sum2 = 0,max = 0,min =
0;

    printf("Input a number : \n");
    do {
        scanf("%d", &num);

        if(num == 0){
            break;
        }
        if(num > 0) {
            count1++;
            sum1 = sum1 + num;
        }else if(num < 0) {
            count2++;
            sum2 = sum2 + num;
        }
        if((num % 3 == 0) && (num != 0)) {
            count3++;
        }
        if(num > max)
            max = num;
        else if(num < min)
            min = num;
    }while(1);
    printf("Number of positive integers:%d\n", count1);
    printf("Number of negative integers:%d\n", count2);
    printf("Sum of positive integers:%d\n", sum1);
    printf("Sum of negative integers:%d\n", sum2);
    printf("Number of multipliers of 3 :%d\n", count3);
    printf("Maximum number: %d\n", max);
    printf("Minimum number: %d\n", min);
    return 0;
}
```

Methods – 02,

```c
#include <stdio.h>
int main() {
    int num, countP = 0, countN = 0, sumP = 0, sumN = 0, mul3 = 0, max = 0,
min = 0;
    printf("Enter the numbers: \n");
    do{
        scanf(" %d", &num);
        if(num > 0){
            countP++;
            sumP += num;

        }
```

```
        if(num < 0){
            countN++;
            sumN += num;
        }
        if((num % 3 == 0) && (num != 0))
            mul3++;
        if(num > max)
            max = num;
        else if(num < min)
            min = num;

    }while(num != 0);
    printf("No. of positive integers: %d\n", countP);
    printf("No. of negative integers: %d\n", countN);
    printf("Sum of positve intrgers: %d\n", sumP);
    printf("Sum of negative integers: %d\n", sumN);
    printf("No. of integers divisible by 3: %d\n", mul3);
    printf("Maximum number: %d\n", max);
    printf("Minimum number: %d\n", min);
    return 0;
}
```