Chapter-2

Programming Exercise

2.1 Write a program to determine and print the sum of the following harmonic series for the given value of n:

$$1 + \frac{1}{2} + \frac{1}{3} + \ldots\ldots + 1/n$$

The value of n should be given interactively through the terminal.

Answer:

```
#include <stdio.h>
int main()
{
int i, n;
float t, Sum = 0;
printf("Enter the value of n : \n");
scanf("%d", &n);
for (i=1; i<=n; i++)
{ t = 1/(float)i ;
  Sum = Sum + t
}
printf("%0.3f", Sum);
return 0;
}
```

2.2 Write a program to read the price of an item in decimal form and print the output in paise.

Answer:

```
#include <stdio.h>
int main()
{
float T;
 int paise;
 printf("Enter the price in decimal:");
 scanf("%f", &T);
 paise = T * 100;
 printf("The price in paise:%d", paise);
 return 0;
}
```

Output:

41.28

4828

2.3 Write a program that prints the even numbers from 1 to 100.

Answer:

```
#include <stdio.h>
int main()
{
  int num;
  for (num=0; num<=100; num++)
  {
   if ((num+1)%2==0)
    printf("%d\t", num+1);
  }
  return 0;
}
```

Output:

2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40,
42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, & 70, 72, 74,
76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100

2.4 Write a program that requests two float type numbers from the users and then divides the first number by the second and display the results along with the number.

Answer :

```
#include <stdio.h>
int main()
{
float num1, num2, num3;
printf("Enter the value of num 1 and num 2 \n");
Scanf ("%f %f", &num1, &num2);
num3 = num1 / num2;
printf (".3%f .3%f .3%f", num1, num2, num3);
return 0;
}
```

Output :

2.4 + 2.4 = 4.8

2.5 The price of one kg of rice is Rs 16.75 and one kg of sugar is 15. write a program to get these values from the users and display the prices.

Answer:

```
#include <stdio.h>
int main() {
int r,s;
float rice, sugar;
rice =16.75;
sugar =15.00;
printf("Enter value of rice and sugar \n");
scanf ("%d%d", &r, &s);
printf ("*** List OF ITEAMS *** \n");
printf ("Item \t total - price \n");
printf ("Rice \t Rs %.2f \n", rice*r);
printf ("Sugar \t Rs %.2f \n", sugar *s);
return 0;
}
```

Output: Enter value of rice and sugar

2
2

*** List OF ITEMS ***
Item total - price
Rice Rs 33.50
Sugar Rs 30.00

2.6 Write a program to count and print the number of negative and positive numbers in a given set of numbers. Test your program with a suitable set of numbers. Use scanf to read the numbers. Reading should be terminated when the value is 0.

Answer:

```
#include <stdio.h>
int main()
{
 int n, pos=0, neg=0;
 input:
 printf("Enter your number one by one to end your
                                    set press 0 \n");

 scanf("%d", &n);
 if(n>0){
  pos++;
 }
 if(n<0){
  neg++;
 }
}
```

```
if (n==0) {
goto output;
}
```

Output:

```
printf ("there are %d positive and %d negative numbers\n", pos, neg);
return 0;
}
```

2.7 Write a program to do the following:

a) Declare x and y as as integer variables and z as short integer variable.

b) Assign two 6 digits numbers to x and y.

c) Assign the sum of x and y to z.

d) Output the values of x, y and z

comment on the output.

```
#include <stdio.h>
void main ()
{
int x=1234567, y=234567;
short int;
z=x+y
```

```
printf ("X=%d\n Sum = %d\n", x,y,z);
printf ("compiler printing wrong value because short integer
        data type range is only -128 to 127 \n")
return 0;
}
```

Output : X = 123456
Y = 234567
Sum = 30343

compiler printing wrong value because short integer data type range is only -128 to 127.

2.8 Write a program to read two floating point numbers using scanf statement, assign their sum to an integer variable and then output the values of all three variables.

Answer :

```
#include <stdio.h>
int main()
{ int sum;
float x,y;
Scanf ("%f%f", &x,&y);
Sum = X+Y;
printf ("X=%f\n Y=%f\n Sum=%d\n", x, Y, Sum);
return 0;
}
```

Output:

x = 2.4
y = 2.4

Sum = 4

2.9 write a program to illustrate the use of typedef declaration in a program.

```
#include <stdio.h>
int main()
{int n;
 typedeaf int taka;
 taka sumon = 10, shamu = 20, total;
 total = sumon + shamu;
 printf("total tk: %d \n", total);
 return 0;
}
```

Output:

total tk: 30

2.10 Write a program to illustrate the use of symbolic constants in real-life application.

```
#include <stdio.h>
# define PI 3.14159
int main ( )
{
float A,R;
printf ("Enter radius of your wheel \n");
Scanf ("%f", &R);
A = 2* PI *R;
printf ("perimeter of wheel %f \n", A);
```