PSP ASSIGNMENT 3

Program 1

//Boolean expressions, simple if. (program to check whether the given number is even or odd)

```
#include<iostream>
using namespace std;
int main()
{
int n;
cout << " Please enter a num to check even or odd : ";
cin >> n;
if(n % 2 == 0)
cout << "\nEven";
else
cout << "\nOdd";
return 0;
}
```

Program 2

// Simple if-else, program to check whether the given year is leap year or not

```
#include<iostream>
using namespace std;
int main()
{
int year;
cout << " Please enter a Year : ";
cin >> year;
if(year % 100 == 0)
if(year % 400 == 0)
cout << "\nleap year";
else
cout << "\nNon leap Year";
else if(year % 4 == 0)
cout <<"\nleap year";
else
cout << "\nNon Leap Year";
return 0;
}
```

Program 3

//Nested if-else. (program for displaying three inputted numbers in ascending order)

```
#include<iostream>
using namespace std;
int main()
```

```
{
int a,b,c,max,min;
cout <<"\nPlease enter three numbers : ";
cin >>a >>b >>c;
if (a > b)
if(b > c)
cout << c << " " << b << " " << a;
else
if(a>c)
cout << b << " " << c << " " << a;
else
cout << b << " " << a << " " << c;
else
if(b < c)
cout << a << " " << b << " " << c;
else
if(a<c)
cout << a << " " << c << " " << b;
else

cout << c << " " << a << " " << b;
return 0;
}
```

Program 4

//switch case and break statement. (program to design a simple calculator)

```
# include <iostream>
using namespace std;
int main() {
char op;
float num1, num2;
cout << "Enter operator: +, -, *, /: ";
cin >> op;
cout << "Enter two operands: ";
cin >> num1 >> num2;
switch(op) {
case '+':
cout << num1 << " + " << num2 << " = " << num1 + num2;
break;
case '-':
cout << num1 << " - " << num2 << " = " << num1 - num2;
break;
case '*':
cout << num1 << " * " << num2 << " = " << num1 * num2;
break;
```

```
case '/':
cout << num1 << " / " << num2 << " = " << num1 / num2;
break;
default:
// If the operator is other than +, -, * or /, error message is shown
cout << "Error! operator is not correct";
break;
}
return 0;
}
```

Program 5(i)

```
//while loop.  Program to compute i) the sum of first n numbers.
#include<iostream>
using namespace std;
int main()
{
int n,sum=0;
cout<<"Enter number till which you would like to add";
cin>>n;
while(n>0)
{
sum+=n;
n--;
}
cout<<"\n sum is:"<<sum;
return 0;
}
```

Program 5(ii)

```
//ii) sum of the following series 1+1.2+1.2.3+….+1.2.3…n
#include<iostream>
using namespace std;
int main()
{
int n,prod=1,i=1,sum=0;
cout<<"Enter the value of n : ";
cin>>n;
while(n>0)
{
while(i<=n)
{
prod*=i;
i++;
}
sum+=prod;
```

```
n--;
i=1;
prod=1;
}
cout<<"\n sum is:"<<sum;
return 0;
}
```

Program 6

```
//Program to compute GCF and LCM of two numbers using while loop
#include<iostream>
using namespace std;
int main()
{
int a, b, x, y, temp, hcf, lcm;
cout<<"\n Enter Two Numbers : \n";
cin>>x>>y;
a=x;
b=y;
while(b!=0)
{
temp=b;
b=a%b;
a=temp;
}
hcf=a;
lcm=(x*y)/hcf;
cout<<"\n HCF : "<<hcf<<"\n";
cout<<"\n LCM : "<<lcm<<"\n";
return 0;
}
```

Program 7

```
//do-while loop. (program to compute factorial of a given number)
#include <iostream>
using namespace std;
int main() {
int n,factorial = 1,i = 1;
cout << "Please enter a number : ";
cin>> n;
do {
factorial *= i;
i++;
} while (i <= n);
cout << factorial << endl;
}
```

Program 8(i)

```
// for loop. Fibonacci series
#include <iostream>
using namespace std;
int main() {
int n, t1 = 0, t2 = 1, nextTerm = 0;
cout << "Enter the number of terms: ";
cin >> n;
cout << "Fibonacci Series: ";
for (int i = 1; i <= n; ++i) {
// Prints the first two terms.
if(i == 1) {
cout << t1 << ", ";
continue;
}
if(i == 2) {
cout << t2 << ", ";
continue;
}
nextTerm = t1 + t2;
t1 = t2;
t2 = nextTerm;
cout << nextTerm << ", ";
}
return 0;
}
```

Program 8(ii)

```
// program to find prime numbers in a given range
#include <iostream>
using namespace std;
int main()
{
int a, b, i, flag;
cout << "\nEnter start value : ";
cin >> a;
cout << "\nEnter end value : " ;
cin >> b;
cout << "\nPrime Numbers between " << a << " and " << b << " : ";
while (a < b)
{
flag = 0;
for(i = 2; i <= a/2; ++i)
```

```
{
if(a % i == 0)
{
flag = 1;
break;
}
}
if (flag == 0)
cout << a << " ";
++a;
}
cout << endl;
return 0;
}
```