

## Lab 2 Solutions

### Problem 1:

The program takes 2 inputs from the user, and stored it in variables *input* and *a*.

- If the user has inputted the value of *input* as 1
  - a- the string *choice* will be assigned value "Hello World".
  - b- In the *if-else* construct, the condition returned to the *if* statement will be  $a > 1$ . Now, if this condition is true (i.e if  $a > 1$ ), then Why did you pick "Hello World"? will be displayed.
  - c- If this returned condition is false, (i.e if  $a < 1$ ), then Yay you picked Hello World will be displayed.
- If the user has inputted the value of *input* as 0
  - a- the string *choice* will be assigned value "I love C++".
  - b- In the *if-else* construct, the condition returned to the *if* statement will be  $a < 1$ . Now, if this condition is true (i.e if  $a < 1$ ), then Why did you pick "I love C++"? will be displayed.
  - c- If this returned condition is false, (i.e if  $a > 1$ ), then Yay you picked I love C++ will be displayed.

### Problem 2:

```
int sum = 0, i = 0;
```

```
do
```

```
{
```

```
    sum += i++;
```

```
} while ( i < 5 );
```

### **Problem 3:**

```
#include <iostream>
int main()
{
float a, sum=0;
for (int i=1;i<=10;i++)
{
    cout << "Enter number whose to be added to the series:";
    cin >> a;
    if( a == 0 )
        break;
    else if ( a == 1) continue;
    else sum += 1 / a;
}
```

### **Problem 4:**

```
#include<iostream>
int main()
{
int choice, a, b;
cout << "Enter two numbers:";
cin >> a >> b;
cout << "1. Difference of two numbers" << endl
    << "2. Quotient of two numbers" << endl
    << "3. Remainder of two numbers" << endl
    << "Enter your choice:";
cin >> choice;

switch(choice)
{
case 1: if ( a > b )
        cout << "Difference is " << a -b << endl;
    else
        cout << "Difference is " << b -a << endl;
    break;
```

```

case 2: if ( a > b )
        cout << "Quotient is " << a / b << endl;
        else
            cout << "Quotient is " << b / a << endl;
        break;
case 3: if ( a > b )
        cout << "Remainder is " << a % b << endl;
        else
            cout << "Remainder is " << b % a << endl;
        break;
default: cout << "Not an option!" << endl;
}
return 0;
}

```

### **Problem 5:**

```

#include <iostream>
// For the second possibility below: #include <cmath>
int main()
{ int n;
  float sum = 0, denom = 1;
  cout << "Enter the number of terms of the series:" << endl;
  cin >> n;
  for (int i = 1; i<=n; i++, denom += 2)
  {
    if( i % 2 == 0 )
      sum += 1 / (denom * denom );
    else
      sum -= 1 / (denom * denom );}
  // or sum += pow(-1.0, i) * 1/( term * term)
  // Also, instead of adding to denom each time, the denominator can be
  // calculated as (2 * i - 1)
  cout<<"The sum is:"<<sum<<endl;
  return 0; }

```

**Problem 6:**

```
#include <iostream>
int main()
{
    int n;
    float sum=0,term=1;
    cout << "Enter the number of rows of the pattern:";
    cin>>n;
    for (int i=n; i > 0; i--)
    {
        for(int j=n; j>=i; j--)
            cout << j << '\t';
        cout << endl;
    }
    return 0;
}
```

**Problem 7: (10/70)**

```
#include<iostream>
// For the second possibility below:#include <cmath>
int main()
{
    int n,x, sum = 0;
    cout << "Enter the value for term 'x': ";
    cin >> x;
    cout << "Enter the sub-series of the main series: ";
    cin >> n;
    for(int i=1; i<=n; i++)
    {
        int term=1;
        for(int j=1; j<=i; j++)
            { term *= x;
              sum += term; }
    }
}
```

```

/*Alternate possibility:
for(int i=1; i<=n; i++)
{
    for(int j=1; j<=i; j++)
        {    sum += pow(x, b); }
} */
cout << "The sum is:" << sum << endl;
return 0;
}

```

### **Problem 8:**

```

#include <iostream>
int main()
{
    int num;
    float sum=0, term=1;
    cout<<"Enter the number:";
    cin>>num;
    for(int n=num; n > 0; n /= 10 )
    {
        int digit = n % 10;
        sum += digit * digit * digit;
    }
    if( sum == num )
        cout << "This is an Angstrom number" << endl;
    else
        cout << "This is not an Angstrom number" << endl;
    return 0;
}

```