C++ Assignment Solutions | Loops-2 | Week 3

1. Predict the output

```
#include <bits/stdc++.h>
using namespace std;

int main() {
    while ('1' < '2')
        cout << "In while loop" << endl;
}
```

Solution:

```
// Infinite Loop
In while loop
In while loop
In while loop
In while loop
In while loop
In while loop
In while loop
In while loop
In while loop
In while loop
.
.
.
```

2. Predict the output

```
#include <bits/stdc++.h>
using namespace std;

int main( ) {
    int t = 10;
    while (t /= 2) {
        cout << "Hello" << endl;
    }
}
```

Solution:

```
Hello
Hello
Hello
```

3. Predict the output

```
#include <bits/stdc++.h>
using namespace std;

int main( ) {
    for (int x = 1; x * x <= 10; x++)
        cout << "In for loop" << endl;
}
```

Solution:

```
In for loop
In for loop
In for loop
```

4. Predict the output

```
#include <bits/stdc++.h>
using namespace std;

int main( ) {
    int x = 10, y = 0 ;
    while ( x >= y ) {
        x-- ;
        y++ ;
        cout <<  x << " " <<  y  << endl ;
    }
}
```

Solution:

`9 1`

`8 2`

`7 3`

`6 4`

`5 5`

`4 6`

5. WAP to print the sum of all the even digits of a given number.

   `Sample Input : 4556`

   `Output: 10`

Solution:

```
#include <bits/stdc++.h>
using namespace std;

int main( ) {
    int n;
    cin >> n;
    int sum = 0;
    while (n > 0) {
        int x = n % 10;
        sum += (x % 2 == 0 ? x : 0);
        n /= 10;
    }
    cout << sum;
}
```

6. WAP to print the sum of a given number and its reverse.

   `Sample Input : 12`

`Sample Output : 33 [12+21]`

Solution:

```
#include <bits/stdc++.h>
using namespace std;

int main( ) {
    int n;
    cin >> n;
    int temp = n, x = 0;
    while (temp > 0) {
        x *= 10;
        x += (temp % 10);
        temp /= 10;
    }
    cout << n + x << endl;
}
```

7. Print the factorials of first ‘n’ numbers

   `Sample Input : 10`

   `Output :`

   1

   2

   6

   `24`

   `120`

   `720`

   `5040`

   `40320`

   `362880`

   `3628800`

Solution:

```
#include <bits/stdc++.h>
using namespace std;

int main( ) {
    int n;
    cin >> n;
    int f = 1;
    for (int i = 1; i <= n; i++) {
        f *= i;
        cout << f << endl;
    }

}
```

8. Print first ‘n’ fibonacci numbers.

   `Sample Input : 10`

   `Output :`

   `1 1 2 3 5 8 13 21 34 55`

Solution:

```
#include <bits/stdc++.h>
using namespace std;

int main( ) {
    int n;
    cin >> n;
    int f0 = 1, f1 = 1;
    cout << f0 << " " << f1 << " ";
    for (int i = 3; i <= n; i++) {
        int next = f0 + f1;
        cout << next << " ";
        f0 = f1;
        f1 = next;
    }

}
```

9. Write a program to print out all Armstrong numbers between 1 and 500. If the sum of cubes of each digit of the number is equal to the number itself, then the number is called an Armstrong number. For example, `153 = ( 1 * 1 * 1 ) + ( 5 * 5 * 5 ) + ( 3 * 3 * 3 )`

   `Output :`

   1

   `153`

`370`

`371`

`407`

Solution:

```
#include <bits/stdc++.h>
using namespace std;

int main( ) {

    for (int i = 1; i <= 500; i++) {
        int x = 0, temp = i;
        while (temp > 0) {
            int m = temp % 10;
            x += m * m * m;
            temp /= 10;
        }
        if (i == x) {
            cout << i << endl;
        }
    }

}
```

Note:- Please try to invest time doing the assignments which are necessary to build a strong foundation. Do not directly Copy Paste using Google or ChatGPT. Please use your brain😀.
