Number of Factors Optimal

Java Code:

```java
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {
    public static void main(String args[] ) throws Exception {
        Scanner scn = new Scanner(System.in);
      //System.out.println("enter a number");
      int n = scn.nextInt();
      int count = 0;
      for(int i =1;i*i<=n;i++){
        if(n%i==0){
                if(i != n/i){count = count+2;}
                else{count++;}
        }
      }

      System.out.println(count);
    }
}
```

C++ Code:

```cpp
#include <iostream>
using namespace std;

int main() {
    int n;
    cin >> n;

    int count = 0;
    for (int i = 1; i * i <= n; i++) {
```

```
        if (n % i == 0) {
            if (i != n / i) {
                count = count + 2;
            } else {
                count++;
            }
        }
    }

    cout << count << endl;

    return 0;
}
```

Python Code:

```python
def main():
    n = int(input())

    count = 0
    for i in range(1, int(n**0.5) + 1):
        if n % i == 0:
            if i != n // i:
                count += 2
            else:
                count += 1

    print(count)

if __name__ == "__main__":
    main()
```

IsPrime Optimal

Java Code:

```java
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {
    public static void main(String args[] ) throws Exception {
        Scanner scn = new Scanner(System.in);
        //System.out.println("enter a number");
        int n = scn.nextInt();
        int count = 0;
        for(int i =1;i*i<=n;i++){
            if(n%i==0){
                if(i != n/i){count = count+2;}
                else{count++;}
            }
        }


        if(count == 2){
            System.out.println("Yay");
        }else{
            System.out.println("Nay");
        }

    }
}
```

C++ Code:

```cpp
#include <iostream>
using namespace std;
```

```cpp
int main() {
    int n;
    cin >> n;

    int count = 0;
    for (int i = 1; i * i <= n; i++) {
        if (n % i == 0) {
            if (i != n / i) {
                count += 2;
            } else {
                count++;
            }
        }
    }

    if (count == 2) {
        cout << "Yay" << endl;
    } else {
        cout << "Nay" << endl;
    }

    return 0;
}
```

Python Code:

```python
def main():
    n = int(input())

    count = 0
    for i in range(1, int(n ** 0.5) + 1):
        if n % i == 0:
            if i != n // i:
                count += 2
            else:
                count += 1

    if count == 2:
        print("Yay")
    else:
        print("Nay")
```

```python
if __name__ == "__main__":
    main()
```

Sum of Natural Numbers

Java Code:

```java
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {

    public static void main(String[] args) {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class
should be named Solution. */
        Scanner scn = new Scanner(System.in);
        int n= scn.nextInt();

        System.out.println(n*(n+1)/2);
    }
}
```

C++ Code:

```cpp
#include <iostream>
using namespace std;

int main() {
    int n;
    cin >> n;

    cout << n * (n + 1) / 2 << endl;

    return 0;
}
```

Python Code:

```python
def main():
    n = int(input())
    print(n * (n + 1) // 2)


if __name__ == "__main__":
    main()
```

Floor(SQRTN)

Java Code:

```java
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {

    public static void main(String[] args) {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class
should be named Solution. */
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();

        int i = 1;
        int ans = 1;

        while(i*i<=n){
            ans = i;
            i++;
        }

        System.out.println(ans);
    }
}
```

C++ Code:

```cpp
#include <iostream>
using namespace std;

int main() {
    int n;
    cin >> n;

    int i = 1;
    int ans = 1;

    while (i * i <= n) {
        ans = i;
        i++;
    }

    cout << ans << endl;

    return 0;
}
```

Python Code:

```python
def main():
    n = int(input())

    i = 1
    ans = 1

    while i * i <= n:
        ans = i
        i += 1

    print(ans)

if __name__ == "__main__":
    main()
```

Product and Sum of Digits

Java Code:

```java
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();

        System.out.println(subtractProductAndSum(n));
    }

    public static int subtractProductAndSum(int n) {
        int sum =0;
        int multiply = 1;

        while(n>0){
            int lastdigit = n%10;

            sum = sum + lastdigit;
            multiply = multiply*lastdigit;

            n = n/10;
        }

        return multiply - sum;
    }
}
```

C++ Code:

```cpp
#include <iostream>
using namespace std;
```

```cpp
int subtractProductAndSum(int n) {
    int sum = 0;
    int multiply = 1;

    while (n > 0) {
        int lastdigit = n % 10;

        sum = sum + lastdigit;
        multiply = multiply * lastdigit;

        n = n / 10;
    }

    return multiply - sum;
}

int main() {
    int n;
    cin >> n;

    cout << subtractProductAndSum(n) << endl;

    return 0;
}
```

Python Code:

```python
def subtractProductAndSum(n):
    sum_ = 0
    multiply = 1

    while n > 0:
        lastdigit = n % 10

        sum_ = sum_ + lastdigit
        multiply = multiply * lastdigit

        n = n // 10

    return multiply - sum_

def main():
```

```
    n = int(input())
    print(subtractProductAndSum(n))

if __name__ == "__main__":
    main()
```

Fibonacci Number_HW

Solution Video:

Java Code:

```java
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();

        int a = 0;
        int b = 1;

        for(int i = 1;i<=n;i++){
            int c = a+b;
            a = b;
            b = c;
        }

        System.out.println(a);
    }
}
```

C++ Code:

```cpp
#include <iostream>
using namespace std;

int main() {
    int n;
    cin >> n;

    int a = 0;
    int b = 1;

    for (int i = 1; i <= n; i++) {
        int c = a + b;
        a = b;
        b = c;
    }

    cout << a << endl;

    return 0;
}
```

Python Code:

```python
def main():
    n = int(input())

    a, b = 0, 1

    for i in range(1, n):
        c = a + b
        a = b
        b = c

    print(a)
```

```
if __name__ == "__main__":
    main()
```

Valid Perfect Squares_HW

Solution Video:

https://youtu.be/Jhqw9lRv1Uc

Java Code:

```java
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int num = scn.nextInt();
        int i = 1;
        int ans = 1;

        while(i*i<=num){
            ans = i;
            i++;
        }

        if(ans*ans == num){
            System.out.println(true);
        }else{
            System.out.println(false);
        }
    }
}
```

C++ Code:

```cpp
#include <iostream>
using namespace std;

int main() {
    int num;
    cin >> num;

    int i = 1;
    int ans = 1;

    while (i * i <= num) {
        ans = i;
        i++;
    }

    if (ans * ans == num) {
        cout << "true" << endl;
    } else {
        cout << "false" << endl;
    }

    return 0;
}
```

Python Code:

```python
def main():
    num = int(input())

    i = 1
    ans = 1

    while i * i <= num:
        ans = i
        i += 1

    if ans * ans == num:
        print(True)
```

```python
    else:
        print(False)

if __name__ == "__main__":
    main()
```