# CSE Assignment (C++)

## Problem 1

### Question:

> *Write a program to calculate cube of a given variable using inline function and return the result by reference.*

### Code:

```cpp
#include <iostream>

using namespace std;

inline const int& cube(int number = 0)
{
    return number * number * number;
}

int main()
{
    int num;

    cout << "Enter a number : ";
    cin >> num;

    cout << "The cube of the number is : " << cube(num) << endl;

    return 0;
}
```

### Output:

```
Enter a number : 4
The cube of the number is : 64
```

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## Problem 2

### Question:

> *Write a program to find the largest of the three numbers using inline functions.*

### Code:

```cpp
#include <iostream>

using namespace std;

inline int greatest_Of_Three(int one = 0, int two = 0, int three = 0)
```

```
{
    return (one > two && one > three) ? one : (two > one && two > three) ? two :
three;
}

int main()
{
    int one, two, three;

    cout << "Enter three numbers : ";
    cin >> one >> two >> three;

    cout << "The greatest of the three is : " << greatest_Of_Three(one, two, three) <<
endl;

    return 0;
}
```

**Output:**

```
Enter three numbers : 3 77 69
The greatest of the three is : 77
```

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## Problem 3

**Question:**

> *Write a program to find the absolute value of an integer, double and float value using function overloading.*

**Code:**

```
#include <iostream>
#include <iomanip>

using namespace std;

int absolute(int val)
{
    return (val >= 0) ? val : -val;
}

float absolute(float val)
{
    return (val >= 0) ? val : -val;
}

double absolute(double val)
{
    return (val >= 0) ? val : -val;
}
```

```
int main()
{
    int int_val = -200;
    double dob_val = -345.76651231;
    float flo_val = -214.09457;

    cout << "The absolute value of int : " << absolute(int_val) << endl;
    cout << setprecision(16) << "The absolute value of double : " << absolute(dob_val)
<< endl;
    cout << setprecision(8) << "The absolute value of float : " << absolute(flo_val)
<< endl;

    return 0;
}
```

**Output:**

```
The absolute value of int : 200
The absolute value of double : 345.76651231
The absolute value of float : 214.09457
```

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## Problem 4

**Question:**

> *Raising a number 'N' to the power 'P' is the same as multiplying N by itself P times. Write a function called power() that takes N (double) and P (int) as input, and returns the result N*P as a double value. Use a default argument of 2 for P, so that if this argument is omitted, the number N will be squared. Overload power() function, to work with int, long, and float. Overload the power() function for char datatype also, which should print P times the given character N. Write the main() program to exercise these overloaded functions with all argument types.*

**Code:**

```
#include <iostream>

using namespace std;

int power(char N, int P = 2)
{
    for(int i = 0; i < P; i++)
    {
        cout << N;
    }

    return 0;
}

double power(double N, int P = 2)
```

```
{
    double result = 1;

    for(int i = 0; i < P; i++)
    {
        result *= N;
    }

    return result;
}

float power(float N, int P = 2)
{
    float result = 1;

    for(int i = 0; i < P; i++)
    {
        result *= N;
    }

    return result;
}

int power(int N, int P = 2)
{
    int result = 1;

    for(int i = 0; i < P; i++)
    {
        result *= N;
    }

    return result;
}

long power(long N, int P = 2)
{
    long result = 1;

    for(int i = 0; i < P; i++)
    {
        result *= N;
    }

    return result;
}

int main()
{
    double dob = 3.4745645123;
    char cha = 'F';
    int inint = 5;
```

```
    long looong = 123456;
    float flo = 1.2;

    cout << "power(dob, 5) => " << power(dob, 5) << endl;
    cout << "power(dob) => " << power(dob) << endl;
    cout << "power(inint, 4) => " << power(inint, 4) << endl;
    cout << "power(intint) => " << power(inint) << endl;
    cout << "power(looong, 3) => " << power(looong, 3) << endl;
    cout << "power(looong) => " << power(looong) << endl;
    cout << "power(flo, 5) => " << power(flo, 5) << endl;
    cout << "power(flo) => " << power(flo) << endl;
    cout << "power(cha, 22) => " << power(cha, 22) << "\b " << endl;
    cout << "power(cha) => " << power(cha) << "\b " << endl;

    return 0;
}
```

**Output:**

```
power(dob, 5) => 506.41
power(dob) => 12.0726
power(inint, 4) => 625
power(intint) => 25
power(looong, 3) => 1881640295202816
power(looong) => 15241383936
power(flo, 5) => 2.48832
power(flo) => 1.44
power(cha, 22) => FFFFFFFFFFFFFFFFFFFFFF
power(cha) => FF
```

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## Problem 5

**Question:**

> *Program to compute the volume of a cylinder using a function compute(), with default values - 1 for radius of the base of the cylinder and 2 for height of the cylinder. Calculate and return the volume of the cylinder, by calling the function from the main(), with and without arguments.*

**Code:**

```
#include <iostream>

using namespace std;

float compute(int radius = 1, int height = 2)
{
    return 3.14 * radius * radius * height;
}

int main()
```

```
{
    cout << "Volume of cylinder with radius = 5 and height = 8 : " << compute(5, 8) <<
endl;
    cout << "Volume of cylinder : " << compute() << endl;

    return 0;
}
```

**Output:**

```
Volume of cylinder with radius = 5 and height = 8 : 628
Volume of cylinder : 6.28
```

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