Object Oriented Programming Lab

Assignment 2

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Year: 2nd Year

1. Write a function that takes two integers by reference and returns the larger one. Also, update both variables by adding 1.

Code

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

pair<int,int> fxn1(int &a,int &b){
    a++;
    b++;
    return {a,b};
}

int main1(){
    int a = 10;
    int b = 20;
    pair<int,int>ans = fxn1(a,b);
    cout<<a<<" "<<b;
}
```

Sample Output

```
11 21
```

2. Write a function that takes multiple variables by reference and updates their values based on user input.

Code

```cpp
void fxn2(int &a, int &b, int &c) {
    cout << "Enter three integers: ";
    cin >> a >> b >> c;
}

void main2() {
    int a, b, c;
    fxn2(a, b, c);
    cout << "Updated values: " << a << " " << b << " " << c << endl;
}
```

Sample Output

```
Enter three integers: 2 3 4
Updated values: 2 3 4
```

3. Write a function that adds a number to a vector passed by reference.

Code

```cpp
void fxn3(vector<int> &v, int num) {
    v.push_back(num);
}

int main3(){
    vector<int>v = {1,2,3};
    int num;
    cout<<"Enter Number to push into vector : ";
    cin>>num;
    cout<<"Before Pushing Number : ";
    for(auto i : v) cout<<i<<" ";
    cout<<endl;
    fxn3(v,num);
    cout<<"After pushing Number : ";
    for(auto i : v) cout<<i<<" ";
}
```

Sample Output

```
Enter Number to push into vector : 4
Before Pushing Number : 1 2 3
After pushing Number : 1 2 3 4
```

4. Function to calculate quotient and remainder

Code

```cpp
void fxn4(int a, int b, int &quotient, int &remainder) {
    if (b == 0) {
        cout << "Error: Division by zero is undefined." << endl;
        quotient = 0;
        remainder = 0;
        return;
    }
    quotient = a / b;
    remainder = a % b;
}

int main4() {
    int num1 = 20, num2 = 6;
    int q, r;
    fxn4(num1, num2, q, r);
    cout << "Quotient: " << q << endl;
    cout << "Remainder: " << r << endl;
    return 0;
}
```

Sample Output

```
Quotient: 3
Remainder: 2
```

5. Write an inline function that calculates the power of a number with a default exponent of 2 (square). For example, power(3) returns 9, and power(2, 3) returns 8.

Code

```
inline int fxn5(int num,int exponenet = 2){
    return pow(num,exponenet);
}

int main5(){
    cout<<fxn5(3)<<endl;
    cout<<fxn5(2,3);
}
```

Sample Output

```
9
8
```