

## Creative Software Design, Assignment 8-1

Deadline: 2024-10-21 23:59 (No score for late submission)

- Submit your homework by uploading your zip file to the LMS assignment section. Below is an example.

```
13178_Assignment1-1_2024123456.zip
```

```
├ 1.cc  
├ 2.cc  
├ 3.cc  
└ ...
```

- Your zip file name should follow this format:  
**13178\_Assignment[Assignment-number]\_[Student-ID].zip**  
■ Ex. 13178\_Assignment1-1\_2024123456.zip
- Source files should be named as **<filename>.cc** *or* **<filename>.cpp**
- **You must submit your solution in the zip file before the deadline.**

## 1. Write a C++ Program to Add and Multiply Integer Ranges.

### A. Create RangeAdder and RangeMultiplier classes:

1. These classes should add and multiply all integer values between two user-given integers inclusively, i.e., [x, y].
2. RangeAdder and RangeMultiplier should inherit from the RangeCalc class.

### B. The RangeCalc class is defined as follows. You should not modify the RangeCalc class:

```
class RangeCalc {
    virtual void read() = 0;
    virtual void write() const = 0;
    virtual int calculate() = 0;

protected:
    int result;

public:
    void run() {
        read();
        result = calculate();
        write();
    }
};
```

### C. Example of the main() function:

```
int main() {
    RangeCalc *adder = new RangeAdder;
    adder->run();

    RangeCalc *multiplier = new RangeMultiplier;
    multiplier->run();

    return 0;
}
```

### D. Example output of your program (Bold text indicates user input):

```
Add Ints In Range: Sum all integer values between first and second input.
Insert two integers >>1 10
The result is 55

Multiply Ints In Range: Multiply all integer values between first and second input.
Insert two integers >>4 6
The result is 120
```

### E. Submission file: one C++ source file (File name: 1.cc or 1.cpp)

## 2. Write a C++ Program to Convert Dollars to Won.

### A. Write a DollarToWon class that converts dollars to won:

1. The DollarToWon class should inherit from the Converter class.
2. The DollarToWon class **should not** have any member variables.

### B. The Converter class is defined as follows. You should not modify the Converter class:

```
class Converter {
protected:
    double _ratio;
    virtual double convert(double src) = 0;
    virtual string getSrcMetric() = 0;
    virtual string getDestMetric() = 0;

public:
    Converter(double ratio) : _ratio(ratio) { }

    void run() {
        double src;
        cout << "Convert " << getSrcMetric()
              << " to " << getDestMetric() << endl;
        cout << "Input " << getSrcMetric() << ": ";
        cin >> src;
        cout << "Result: " << convert(src)
              << " " << getDestMetric() << endl;
    }
};
```

### C. Example of the main() function:

```
int main() {
    DollarToWon dtw(1176.5);
    dtw.run();
}
```

### D. Example output of your program (Bold text indicates user input):

```
Convert dollar to won
Input dollar: 54
Result: 5882.5 won
```

### E. Submission file: one C++ source file (File name: 2.cc or 2.cpp)