

Week 7 Assignment

MATH 5061: Fundamentals of Computer Programming for Scientists and Engineers

Due: October 28th, 2016

Instructions

Please submit your programs for this as .cpp file and include the compiled binary program. Send them as a .tar.gz or ZIP file via email to math5061@temple.edu. Make sure to use the subject line (without quotes) "MATH5061:Assignment 07 :ACCESSID" Where ACCESSID is your AccessNet ID, for example tue86537.

1 Money Conversion

Implement the money conversion program from Week 2 in C++. Let the user enter a dollar amount and output the corresponding bills and coins (\$20, \$10, \$5, \$1, \$0.25, \$0.10, \$0.05, \$0.01).

Listing 1: Example output

```
Enter amount to convert (XXX.XX): 123.33

6 x 20 dollar
0 x 10 dollar
0 x 5 dollar
3 x 1 dollar

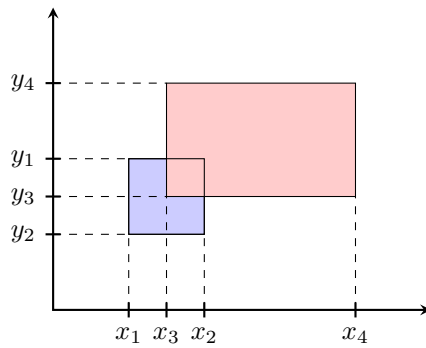
1 x 25 cents (quarters)
0 x 10 cents (dimes)
0 x 5 cents (nickles)
3 x 1 cents
```

Hint: You can use `scanf` to get user input for dollar and cents

```
int dollars = 0;
int cents = 0;
scanf("%d.%d", &dollars, &cents);
```

2 Intersecting Rectangles

Implement the rectangle intersection program from Week 2 in C++. It should check whether two entered rectangles are intersecting or not.



Listing 2: Example output

```
Enter first rectangle:  
- top-left corner (x, y): 10, 20  
- bottom-right corner (x, y): 20, 10  
  
Enter second rectangle:  
- top-left corner (x, y): 15, 30  
- bottom-right corner (x, y): 40, 15  
  
These two intersect!
```

3 Expressions

Evaluate the following expressions yourself and determine the final value and datatype of the result `x`.

```
x = 1 + 2.2;
```

```
int n = 6;  
x = n < 4;
```

```
int i = 42;  
x = ++i - i++;
```

```
float f = (float) 33.3;  
x = 5.2f;  
x *= f;  
x -= f;  
f -= f;  
x = x + f;
```

```
int i = 2;  
x = 1.2 / i;
```

```
float f = 1.3f;  
x = f < 2 && f > 1.5;
```

```
int i = 3;  
x = 77 % 3;
```

```
float f = 3.0;  
x = 6.0 * f;
```