

### Problem 1 – dynamic\_choose\_multiples.c

Create a program that is similar to choose multiples, except you get to choose what number you want to increase by.

```
pamel@DESKTOP-QKCG18R ~/Homework2Redo
$ ./dynamic_choose_multiples.exe
Please enter a number: 38
Please enter a value to increase by: 7
0
7
14
21
28
35
```

```
pamel@DESKTOP-QKCG18R ~/Homework2Redo
$ ./dynamic_choose_multiples.exe
Please enter a number: 81
Please enter a value to increase by: 9
0
9
18
27
36
45
54
63
72
```

### Problem 2 – dynamic\_number\_combinations.c

Create a program that is similar to number\_combinations, but it is possible to enter an x1 that is larger than x2, and a y1 that is larger than y2. Check to make sure that the counting starts with the smaller x or y, respectively, and goes up to the larger x or y.

```
pamel@DESKTOP-QKCG18R ~/Homework2Redo
$ ./dynamic_number_combinations.exe
Please enter x1: 7
Please enter x2: 3
Please enter y1: 9
Please enter y2: 8
x: 3, y: 8
x: 3, y: 9
x: 4, y: 8
x: 4, y: 9
x: 5, y: 8
x: 5, y: 9
x: 6, y: 8
x: 6, y: 9
x: 7, y: 8
x: 7, y: 9
```

```
pamel@DESKTOP-QKCG18R ~/Homework2Redo
$ ./dynamic_number_combinations.exe
Please enter x1: 8
Please enter x2: 4
Please enter y1: 2
Please enter y2: 3
x: 4, y: 2
x: 4, y: 3
x: 5, y: 2
x: 5, y: 3
x: 6, y: 2
x: 6, y: 3
x: 7, y: 2
x: 7, y: 3
x: 8, y: 2
x: 8, y: 3
```

```
pamel@DESKTOP-QKCG18R ~/Homework2Redo
$ ./dynamic_number_combinations.exe
Please enter x1: 4
Please enter x2: 8
Please enter y1: 3
Please enter y2: 2
x: 4, y: 2
x: 4, y: 3
x: 5, y: 2
x: 5, y: 3
x: 6, y: 2
x: 6, y: 3
x: 7, y: 2
x: 7, y: 3
x: 8, y: 2
x: 8, y: 3
```

### Problem 3 – shift\_3\_alphabet.c

Create a program that will take a string and a letter to be replaced. Then, instead of taking a second letter, replace it with the letter that is 3 places down in the alphabet. For this, you will need to have an array of all letters in the alphabet. 'x' should go to 'a', 'y' should go to 'b', and 'z' should go to 'c' (You can approach this several ways, such as using modular arithmetic, or using an if statement to check if the character is equal to x, y, or z first before continuing). Assume that all letters are lowercase. For this problem, you will have to create an array that is the full alphabet. Here is the code so you don't have to type it all out:

```
char alphabet[26] = {'a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j', 'k', 'l', 'm', 'n', 'o', 'p', 'q', 'r', 's', 't', 'u', 'v', 'w', 'x', 'y', 'z'};
```

Be sure to use `scanf("%c", &t);` where t is a character because scanf will want to take in the characters in the printf that come after it. The space will ensure that the code stops to allow you to enter the character.

```
pamel@DESKTOP-QKCG18R ~/Homework2Redo
$ ./shift_3_alphabet.exe
Please enter a string: louisville
What letter do you want to transform: l
Entered character: l
Replaced letters: oouisviooe
```

### Problem 4 – nth\_letter\_replacer.c

Create a program that will take a string, a character, and an index value. Replace the nth instance of the word in the string. Counting should start at 0!

```
pamel@DESKTOP-QKCG18R ~/Homework2Redo
$ ./nth_letter_replacer.exe
Please enter a string: clock
Please enter a character: c
Please enter the character you wish to replace it with: f
Please enter the nth index of the character you would like to replace in the string: 0
flock
```

```
pamel@DESKTOP-QKCG18R ~/Homework2Redo
$ ./nth_letter_replacer.exe
Please enter a string: clock
Please enter a character: c
Please enter the character you wish to replace it with: a
Please enter the nth index of the character you would like to replace in the string: 1
cloak
```

### Problem 5 – inflation\_calculator.c

Create a program that will create an array of prices and an inflation adjustment. Then, create a function that will take the price of the items and the inflation value, and increase the price of the items based upon inflation. YOU MUST USE POINTERS. This problem is similar to the energy conservation problem in the last homework assignment, but you will pass the pointer to the array to the function that will do the inflation calculation. Be sure that your array will have enough storage to store all of the prices you give it (in class I use 50 as an example... that should cover all of the prices that I enter). Enter '0' when you are done entering prices and send the created array to the function. You can hard-code the size of the array (for example, 50) into the inflation calculator function.

It makes sense to use floats instead of ints in the inflation problem since floats can capture percent increases. If you use integers, it will remove the decimal values in the prices.

To calculate the price of inflation  $f$  on  $p$ , calculate  $p * (1 + f)$ ;

To print two decimal places, use `printf("%.2f");`

```
pamel@DESKTOP-QKCG18R ~/Homework2Redo
$ ./inflation_calculator.exe
Please enter a price (enter 0 to finish): 1
Please enter a price (enter 0 to finish): 2.5
Please enter a price (enter 0 to finish): 7.1
Please enter a price (enter 0 to finish): 9.2
Please enter a price (enter 0 to finish): 0.4
Please enter a price (enter 0 to finish): 0
Please enter the inflation rate: 0.07
New price: 1.07
New price: 2.68
New price: 7.60
New price: 9.84
New price: 0.43
```