Homework 4

PROBLEM SOLVING IN C
(CSCE 105, SUMMER 2006)
URL: http://www.cse.unl.edu/~cstrope/csce105su06/

Due on 4th August, 2006

31st July, 2006

Name :
Course No : **CSCE105**

1. (10 points) What is outputted by the following fragment of code?

```
int main(void)
{
  int x = 15;
  double z;

  z = foo(x);
  printf(``z is %f\n'', z);
  return 0;
} //main

double foo(int x)
{
  return (x / 3.0);
} //foo
```

2. (10 points) What is outputted by the following fragment of code?

```
int main(void)
{
  int x = 15;

  foo(&x);
  printf(``x is %d\n'', x);
  return 0;
} //main
```

```
double foo(int* y)
{
  *y = *y * 5;
} //foo
```

3. (10 points) Assume x has a value of 6 and is located at memory location 234. Assume y has a value of 11 and is located at memory location 18. What would be the value of the following expressions:

   (a) x + y

   (b) (int)&x + y

   (c) (int)&x + (int)&y

   (d) *(&x) + *(&y)

   (e) (int)&x + *(&y)

4. (10 points) Create your own enumerated datatype. The datatype should be able to take these values: burger_king, subway, sbarro, valentinos. The datatype name should be restaurant_t.

5. (10 points) Declare an array of size 5 of type int. Assign 2 to the first spot in the array. Assign 4 to the second spot in the array. Assign 6 to the third spot in the array. Assign 8 to the fourth spot in the array. Finally, assign 10 to the last spot in the array. Use only one line of code to accomplish this.

6. (10 points) Repeat the above question, but instead of only using one line of code, declare the variable and then use a for loop to assign the values.

7. (10 points) Write a function named `dispense_change` that calculates how many dollars, quarters, dimes, nickels, and pennies should be returned as change for a given amount of money. Your function should take 6 parameters. The first parameter will be an input parameter that tells how much money to dispense change for. The other five parameters will be output parameters that will be used to return the number of each type of coin or bill to dispense.

   Your function should return the least number of coins possible. For example, if the amount 2.54 is passed in as the amount, your function should return 2 dollars, 2 quarters, 0 dimes, 0 nickels, and 4 pennies.

8. (10 points) Write a program to test the function written in the previous problem. Your program should call your function with the following amounts:

   (a) 2.00

   (b) 0.23

   (c) 13.74

   Your program will call `dispense_change` with each of these amounts. It will then look at the values returned through the output parameters and confirm that they are correct. You will do this using if statements. You should figure out the correct results to compare against by hand.

If the values returned by the function are correct, your program should print the values returned and `Test Passed`. Otherwise, it should print `Test Failed.`

If your function is written correctly, when you run this test driver, it should never print `Test Failed.`

9. (10 points) The value of π can be determined by the series equation

$$\pi = 4 * (1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \frac{1}{11} + \frac{1}{13} - ...) \quad (1)$$

Write a program to approximate the value of π using the formula given including terms up through 1/99.

10. (10 points) Write a program that inputs 10 integer values from the user, and then prints out the negation of those 10 values.

Your program should input the 10 values and then store them in an array. Then, write a function named `negate_values` that takes an array of integer values as its argument, and then negates the first 10 values in the array. Use this function to negate all of the values in the array. Then, print the negated values from the array.

Question	Points	Score
1	10	
2	10	
3	10	
4	10	
5	10	
6	10	
7	10	
8	10	
9	10	
10	10	
Total:	100	