Homework 1

Files to submit: **change.c**, **crash.c**, **fracAdd.c, ReadMe.txt**

- All programs must compile without warnings when using the -Wall option
- If you are working in a group **ALL** members must submit the assignment on SmartSite
- Submit only the files requested
  - Do **NOT** submit folders or compressed files such as .zip, .rar, .tar, .targz, etc
- All output must match the provided solution in order to receive credit
  - We use a program to test your code so it must match exactly to receive credit
- All input will be valid unless stated otherwise
- The examples provided in the prompts do not represent all possible input you can receive. Please see the Tests folder for each problem for more adequate testing
- All inputs in the examples in the prompt are underlined
- If you have questions please post them to Piazza

1. ReadMe.txt
   1. In ReadMe.txt write down your name and the name of your partners. Also include any comments you have about this problem in this file here, especially any of the difficulties your faced.
   2. An example ReadMe.txt has been included in the assignment.

2. change.c (My Time: 5 mins)
    1. You are working at a bank. People routinely come in and withdraw money from their accounts but always request that their money be given to them in the fewest number of bills possible. Write a program called **change.c** that asks the user for how much money they wish to with draw and tells them how many bills they are to receive.
    2. You have bills in the following denominations: 1, 5, 10, 20, 50, and 100
    3. The user will always request to withdraw whole dollar amounts. (Ie they won't withdraw any cents)
    4. Name the compiled executable **change.out**
    5. Examples:

```
1. ./change.out
   Please enter the amount of money you wish to withdraw: 1589
   You received 15 hundred(s)
   You received 1 fifty(s)
   You received 1 twenty(s)
   You received 1 ten(s)
   You received 1 five(s)
   You received 4 one(s)
```

```
2. ./change.out
   Please enter the amount of money you wish to withdraw: 75
   You received 0 hundred(s)
   You received 1 fifty(s)
   You received 1 twenty(s)
   You received 0 ten(s)
   You received 1 five(s)
   You received 0 one(s)
```

3. crash.c (My Time: 5 mins)
    1. There are two trains on the same track heading towards each other. You are told their starting positions from the beginning of the track and how fast they are moving. Write a program called **crash.c** that calculates how long it will take until the trains run into each other and at what location on the track the crash will occur.
    2. Use doubles for all your calculations in this problem
    3. Distances are given in miles
    4. The start of the track begins at mile 0
    5. The speeds of the trains are given in miles per hour
    6. Train 2 will always be farther down the track then Train 1
    7. Report your answers to two decimal places.
    8. Name the compiled executable **crash.out**
    9. Examples

```
1. ./crash.out
   Please enter the starting position of train 1: 50
   Please enter the speed of train 1: 2
   Please enter the starting position of train 2: 100
   Please enter the speed of train 2: 2
   The two trains will collide in 12.50 hours 75.00 miles down
   the track.
2. ./crash.out
   Please enter the starting position of train 1: 75.7
   Please enter the speed of train 1: 0.5
   Please enter the starting position of train 2: 90
   Please enter the speed of train 2: 17.87
   The two trains will collide in 0.78 hours 76.09 miles down
   the track.
```

4. fracAdd.c (My Time: 5 mins)
    1. Write a program called **fracAdd.c** that asks the user for two fractions and adds them together.
    2. Do **NOT** try to simplify the resulting fraction. Doing so is a much harder problem and we haven't covered the techniques that would allow you to solve it.
    3. Name the compiled executable **fracAdd.out.**
    4. Examples:

```
1. ./fracAdd.out
   Please enter the first fraction to be added: 3 / 8
   Please enter the second fraction to be added: 4 / 9
   3/8 + 4/9 = 59/72
2. ./fracAdd.out
   Please enter the first fraction to be added: 4/5
   Please enter the second fraction to be added: 8/4
   4/5 + 8/4 = 56/20
```