Algorithm Workbench Exercises: Learning to write Pseudo code (an algorithm development tool used during the problem solving phase) prior to coding, testing and debugging source code (implementation phase)

1. Write detailed pseudo code for a program (payroll.cpp) that calculates user's gross pay when given inputs for hours worked and hourly pay rate. Use variables named **hours**, **rate**, and **pay**.

```
Input hours           // with prompt  . . . Ask the user to input the number of hours worked
Input rate            // with prompt  . . .  Ask the user to input the hourly pay rate
pay = hours * rate
Display pay
```

2. Write detailed pseudo code for a program that calculates how many days are left until Spring Break (March 18-24), when given as an input how many weeks are left until Spring Break. Use variables named **weeks** and **days**.

3. Write detailed pseudo code for a program that determines how many full 12-egg cartons of eggs a farmer can pack when given as an input the number of eggs he has collected on a given day. Use variables named **eggs** and **cartons**.

4. Write detailed pseudo code for a program that determines distance traveled when given inputs of speed and time. Use variables named **speed**, **time**, and **distance**.

5. Write pseudo code for a program that determines miles per gallon a vehicle gets when given inputs of miles traveled and gallons of gas used. Use variables named **miles**, **gallons**, and **milesPerGallon**.

Sample programming challenges with mixed data types requiring various types of algorithmic solutions

1) Car Type: Honda Fit

45 **Miles per Gallon** with a 13 **gallon tank**
How many **miles** can you drive on a full tank of gas?
If the **current price** for gas is $3.89 per gallon what is the **total cost** to fill the tank?
How much would it **cost** you for every mile you drive?

2) A Box of Bigelow of Green Tea with 20 tea bags cost $3.89 at your local Safeway store.

What is the cost per bag of tea?
Let's say Starbucks sold a cup of Bigelow Green Tea plain for $2.25, what is the gross profit per cup?
What might be the other operational expenses to figure in at a later point?

3) You took an "interest free" student loan of $6000 per year for four years.

If you are able to pay $350 per month, how many months will it take for you to complete paying off the full loan?