Agenda / Learning Objectives:

1. Run the following command and extract lab17.tar in your venus account (note the dot at the end):

    cp ~ctse/cs111/lab17.tar .

2. Review the key ideas used in beer.cpp from lab 16.
    a. How to pause the program for a second between each iteration in a loop?
        →Search for "sleep C++" and check out the suggestions.
        → Look up and use chrono and thread libraries functions.
    b. g++ beer.cpp -o beer -std=c++11
3. Review/Learn about the following Unix commands:
    a. Redirect console output to a file
    b. tail -f <filename>
4. Practice how to answer title lines questions for the exams
5. Practice writing simple functions with one or two lines of code in the function body.
6. Highlight the learning strategies discussed in Dr. Saundra McGuire's books.

Lab work – functions (included again for handy reference)

Every function **prototype/title-line** must have the following 3 things:
i) Function's name
ii) Function's return type (in CS111: int, double, bool, char, string, void)
iii) A list of parameters (it can be an empty list with no parameter all the way up to a large amount)

Here are some examples:

```
bool greaterThan(int a, int b);
       void do_something();
```

Note: In a C++ function, you can only use the return type to **return at most** one "thing" (Be it a simple data type such as an int or a char. Or it can be an entire array or a more complex object.) You cannot pass more than 1 thing back to the calling function.

When you answer the questions about title lines in the exams, you should have a **checklist** similar to the following:
a) What is the function name? Write it down.
b) How many input parameters are there? You must write out the data type for every parameter even if they are the same type. Separate each input parameters by a **comma**.
   • Do I need to use passed by reference for some of the inputs?
c) What is the return type of the function?
   If a function is not returning a value, use **void** as the return type.
   Here are some ways to determine if a function should return a value:
   <u>Assignment:</u>
       int x = fun1(5);
   <u>Printing:</u>
       cout << fun2(x) << endl; //Check the comment such as: Print Hi
   <u>As part of the conditional statement:</u>
       while (fun3(9) == 7) {//fun3 has int as return type
       if (fun4(x)) {//fun4 has bool as return type

Practice with plenty of prac2.pdf questions in order to master this part
of the exam.

1) 6 functions are called in the following main program. Write **title lines** for these functions. **Do not
supply the blocks for the functions.** (questions are modified from professor Kangmei Yang's website.)

```
int main(){
   int a = 100;
   string b = read();
   double c = magic(a + 2.5, a, 100, 100, a + a);
   if ( isOk(c) )
     print(b);

   if ( check(c) == a ) cout << "close";

   cout << firstDigit(a) << endl;   //this would print out the
                                     //first digit of variable a

   return 0;
}
```

2) Complete questions 1 and 5 in professor Ryba's function practice file. The starter code is called
RybaFun.cpp in lab17.tar.