# CS161-020 Final Proficiency Demonstration: Student Handout

1. Pay close attention to these **requirements**:
   - a. No global variables.
   - b. No memory leaks
   - c. No use of help or man.
   - d. No use of the internet.
2. **Wait to begin** until informed by the Proctors.
   You will be **given 50 minutes** from the time the Proctors begin.
3. Do **spend time with design**; ask for scratch paper (do not write on this page or on prompts)
4. Begin writing your code using a **Linux editor** : You may use vi, vim, or emacs as your editor
5. You are also allowed to **compile, test, and debug** your work.
   **g++ -g -o test test.cpp**
   **./test**
   **valgrind ./test**
6. If you accidentally freeze your screen by typing ctrl+s, use **ctrl+q** to unfreeze it.
7. **When you are finished**, wait for the Proctor to check you off.
   - a. Give the Proctor all your design and question material.
   - b. Show, compile, and run your program for the proctor.
   - c. Remove your test.cpp file
8. Grading: 10 for passing (fully coding the solution), 1 for non-passing but submitting work,
   0 for not present

> Academic Integrity: Do not discuss the prompts you receive with other students
> (in either section of 161) until after week 10 is complete.

**Main Template/Libraries for Common Built-in Functions:**

```cpp
/* ASCII values:
48-57   //0-9
65-90   //A-Z
97-122  //a-z
*/

#include <iostream>    /* cin, cout, endl */
#include <cmath>       /* pow(), sqrt() */
#include <string>      /* .length(), .at() */
#include <cstdlib>     /* srand(), rand() */
#include <ctime>       /* time() */
#include <cstring>     /* strlen() */

using namespace std;

int main() {
  /* Example use of random numbers */
  srand(time(NULL));   /* seed random generator */
  rand()%10;           /* generates a number between 0 and 9 (inclusive) */

  /* Example use of C-style strings, where s is a C-style string */
  strlen(s); /* gives number of (non-null) characters in string */

  return 0;
}
```