

Characters and Strings

Create a directory `$USER.1` in your home on admiral. Keep all programs and datafiles for this assignment in this directory. After you are done with the assignment, remove the executables, and execute the following commands:

```
% cd
% ~sanjiv/bin/handin cs2250 1
```

1. [30 pts] **(String Parsing)**. Write a function that asks the user to input a telephone number as a string containing a three-digit area code, followed by a seven-digit number. Also write an accompanying test (driver) program. The function should scan the input string, reading only the first 10 numeric digits (ignoring all other characters in the string), and should report the telephone number in the form `(123) 456-7890`. Note that the user may choose the input format, yet the program maintains a consistent output format.
2. [30 pts] **(String Sorting)**. Write a program that asks a user to input a sequence of strings and then reports back the shortest and longest strings and prints the strings in alphabetical order. You may want to consider input redirection for this assignment.
3. [40 pts] Write a program that reads an integer n and several lines of text. The text that follows the integer n is then printed right justified, n characters per line, by adding extra spaces as evenly as possible. If the input is:

```
30
What's the difference between a mathematician and a computer scientist?
Answer: A mathematician has all the theories and no answers. A computer
scientist has all the answers and no theories.
```

The output is:

```
What's the difference between
a mathematician and a computer
scientist?      Answer:      A
mathematician  has all the
theories and no answers.  A
computer scientist has all the
answers and no theories.
```