

# ACM & WiCS Fall 2021 Programming Contest

Upper Division

October 30th, 2021



**L3HARRIS**

**Deloitte.**



## Do not open until contest starts Instructions for Participants

- Contest URL: <https://domjudge.cs.fsu.edu>
- You have 5 hours to answer questions.
- You may submit solutions in the following languages, **You are restricted to the STL for each language, i.e. no third party libraries are to be used:**
  - C/C++14
  - Python 3.9.2
  - Java 11
  - C# 7.0
- You are only allowed access to official language documentation and COP3014/COP3363 reference material. You are restricted to:
  - C/C++14: <http://www.cplusplus.com/reference/>
  - Java 11: <https://docs.oracle.com/en/java/javase/11/docs/api/index.html>
  - Python 3.9.2: <https://docs.python.org/3/>
  - C# 7.0 <https://docs.microsoft.com/en-us/dotnet/csharp/>
  - COP3014/COP3363 Reference:
    - \* <https://www.cs.fsu.edu/~vastola/cop3014/>
    - \* <https://www.cs.fsu.edu/~vastola/cop3363/>
    - \* <https://www.cs.fsu.edu/~jayarama/prog1.html>

- You are also allowed one textbook or material no larger than 8.5" x 11" x 2" volume.
- No other resources (e.g. Stack Overflow, Google, Wikipedia) are permitted. Using non-permitted materials will lead to disqualification.
- Teams are restricted to using one workstation (computer) each.
- Use of a cell phone to circumvent these restrictions will lead to disqualification. Use of cell phones in contest rooms is not permitted.
- The Clarifications tab on Domjudge may be used to submit questions pertaining to each problem. Do not use this feature to request troubleshooting help.
- **All input is redirected via STDIN.**
- **All output must be formatted to specification in terms of capitalization and spacing. Please refer to the example output for each question.**
- Do not include a shebang in your submissions.
- **Scoring:**
  - Teams are ranked according to score. A higher score is rewarded by answering more questions while acquiring fewer penalties.
  - The team that solves the greatest number of questions in the quickest time wins.
  - Teams which solve the same number of problems are ranked by least total time.
  - Teams may resubmit solutions as many times as needed, but incorrect submission attempts will result in time penalties (and thus a lower score.)
  - The scoreboard may be accessed during the first four hours of the contest. The scoreboard will freeze during the final hour.

Question Writers:

- |                  |                         |
|------------------|-------------------------|
| • Trevor Alspach | • Marlan McInnes-Taylor |
| • Ben Zech       | • Supriya Palli         |
| • Marco Cognetta | • Jack Skellington      |

A special thank you to all the question writers, proctors and volunteers for helping make this contest possible!

# 1 Talking With Ghosts

It's Halloween! In order to properly celebrate such a spooky day, you and some friends have borrowed a ouija board to talk to a ghost. After using the board for some time, you aren't able to decipher any of the messages. Confused, you consult your Ouija Board manual for clues.

Turns out several ghosts are trying to send a message at once! The manual also says that the most powerful spirit will always start their message with Hello and Good Bye, as well as hold each letter for five seconds or more. Using this information, can you decipher the message from the powerful ghost?

## 1.1 Input

**Please note that all input read into the program is done via STDIN, (e.g. using cin statements in C++).**

Only one line of the input is going to have the message "Hello". This will be the beginning of the ghost's message. Only one line is going to have the message "Good Bye", which marks the end of the message.

The rest of the lines will consist of a character followed by a space and an integer value between 1 - 100 representing how many seconds that character was held for.

## 1.2 Output

**Please note that the output to the program should match exactly how it is in the sample output provided. (e.g. Do not prompt for user input, "Please enter the input: ", do not print out things such as "The number is: ", etc.)**

Your output should be the final message from the ghost. This will be a phrase generated from concatenating all characters which have been held for 5 or more seconds.

**Domjudge will have sample Input and Output that you can download directly, so you do not need to manually type out the sample provided.**

SAMPLE INPUT AND OUTPUT ON NEXT PAGE

### 1.3 Sample Input/Output

| Sample Input 1  | Sample output 1 | Sample Input 2   | Sample output 2 |
|---|-----------------|--|-----------------|
| Hello<br>H 6<br>e 5<br>l 7<br>l 6<br>o 5<br>6<br>W 6<br>o 5<br>r 7<br>l 5<br>d 12<br>Good Bye | Hello World     | W 9<br>m 6<br>Hello<br>L 5<br>j 2<br>e 8<br>t 1<br>a 6<br>v 11<br>e 6<br>8<br>N 8<br>k 3<br>o 5<br>w 9<br>Good Bye<br>b 6<br>f 8 | Leave Now       |