ACM & WiCS Fall 2023 Programming Contest

Upper Division

November 4th, 2023

Instructions for Participants

• Contest URL: https://domjudge.cs.fsu.edu
• You have 5 hours to answer questions.
• Teams are eligible to win prizes (in either division) only if members of the team are enrolled at FSU AND do not include faculty/instructors.
• You may submit solutions in the following languages:
  – 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/
  – Python 3.9.2: https://docs.python.org/3/
  – C# 7.0: https://docs.microsoft.com/en-us/dotnet/csharp/
• 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, including peripherals.
• 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, and floating point precision. 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:

• Nicolas Azzi
• Preston Horne
• Supriya Palli
• Lynn Massimore
• Ben Zech
• Sharanya Jayaraman
• Melina Myers
• Vic Rodhin
• Jack Skellington
• Sally

A special thank you to all the question writers, proctors and volunteers for helping make this contest possible!
1 The Boogeyman’s Heterogram

As you and your group of friends venture through the eerie streets, reveling in the Halloween spirit while collecting sweets, an unexpected chill crawls up your spine. Amid the festive chaos, an ominous figure appears, the Boogeyman, an embodiment of fright and darkness.

His sinister presence freezes you in your tracks. His gravelly voice rumbles out a cryptic demand, shrouded in a cloud of gloom: “Produce a heterogram, a word without any repeating letters, or you shall not pass.

In the nerve-wracking silence that follows, your friends exchange worried glances. The pressure mounts as you rack your brain for a word that fits the Boogeyman’s enigmatic challenge. Time seems to hang in suspense, every heartbeat echoing louder in the quiet of the night. Come up with a heterogram or you and your friends will shriek with fright!

1.1 Input

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

The input is a single lower-case string containing only alphabetic characters.

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.)

If the input string is a heterogram, print out “happy halloween!”.

Otherwise, print out “boo!”.

All output for this question should be lowercase, match spacing and punctuation EXACTLY.

1.3 Sample Input/Output

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

<table>
<thead>
<tr>
<th>Sample Input 1</th>
<th>Sample Output 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>vampire</td>
<td>happy halloween!</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sample Input 2</th>
<th>Sample Output 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>dracula</td>
<td>boo!</td>
</tr>
</tbody>
</table>