

UIL Computer Science

District Hands On Contest – Pilot

District Meet Director's Guide

District and Computer Science Contest Directors

- The contest directors are designated UIL officials, and as such have the authority to make decisions regarding the management of the contest to ensure that it is conducted according to UIL rules.
- The Contest Director also has the authority to settle any disputes that might arise in accordance with UIL rules
- If a situation should come up that you are not sure how to resolve, or if you have any questions regarding rules, procedures, etc., please feel free to contact Mike Scott at scottm@cs.utexas.edu or (512) 217-4325 if a more immediate response is required

Introduction: Thank you for agreeing to participate in the pilot of the UIL Computer Science Hands-on programming competition at the district level. The pilot is being conducted to determine if it feasible to include a hands on portion as an official part of the district level contest at some future date. The pilot also allows districts to gain experience in running a hands on programming contest. As a pilot, the result of the hands on competition has no effect on which individuals and team advance to the regional competition. Nor does it affect the district sweepstakes competition. At the district level, those results are based solely on the results of the written test. If you have any questions about these instructions please contact Mike Scott at scottm@cs.utexas.edu or (512) 217-4325.

The rest of this guide consists of two parts. The first details the District Meet Director duties. The second details duties of the Computer Science Contest Director, who is appointed by the District Meet Director. Included with the duties of the Computer Science Contest Director are the instructions for and the duties of other personnel needed to run the Computer Science Hands-on contest.

Fundamental Contest Rules

- **Teams:** In a Hands-on programming contest, teams consist of three members. If a team has four members the coach decides which three members participate in the Hands-on competition. There must be at least 3 members on the team to compete in the Hands-on competition.
- **Hardware:** Each team has one computer consisting of a single monitor, keyboard, and system. If laptops with external keyboards are used, the laptop keyboard must be covered in some way. Teams may use one printer, but a printer is not required.
- **Software:** The computer may be loaded with normal software (such as word processors, etc.), the Java SDK, a development environment (such as JCreator, Eclipse, NetBeans, or whatever IDE the team chooses),
- **Allowed resources:** The documentation for the Java API's, and the API's themselves may be installed on a team's computer. Teams may also have two textbooks or references that are reasonably free of written notes.
- **Non-allowed resources:** It is important that the computer system be free of any code written by the contestants prior to the contest such as solutions to practice problems, solutions to prior contest problems, or programs written in class. A book on a CD or on a team's hard drive is not an acceptable reference and should be removed from the computer system.

District Meet Director Duties (As early as possible before the contest date)

- Appoint a Computer Science Contest Director (a Computer Science coach is good)
 - The Computer Science contest director in charge of the contest and has final say on issues involving judging solutions.
- Meet with the CS Contest Director (CSCD) early.
 - Schedule the contest time slot. (Check conflict pattern for a 2 hour slot for hands on).
 - Assign a room for the contest.
 - Each team should have at least 5 feet of table space, 3 chairs, and a power source.
 - There should be a clock visible for all contestants.
 - The judging area should be separated from the contestants' area but close by to allow a timely flow of solutions and results.
 - Determine where the contest results and Queries will be posted.
 - Determine if the host school will provide a computer system for each team or require each team to provide their own system (EXACTLY ONE computer system per school - each team usually provides their own).
 - Discuss who will make team packets and when (the CSCD is recommended).
 - Determine what computer system will be used for the judging room (1 or 2 systems for 8 teams) and who will install Java 6.0.
 - Determine what judging platform you will use:
 - Compile and run the program and manually check the results against the Judges packet.
 - Use the program provided by the UIL.
 - Use PC².
- As soon as Contest Materials arrive, give the Hands-on Pilot Contest Materials to the CSCD.

District Meet Director Duties (On the contest date before the competition)

- Have the following ready for the contest director:
 - signs with team number and school name.
 - scratch paper and pencils.
 - timer or stop watch.
 - signs for judging, archive and scorekeeper stations.
 - name tags for contest personnel.
- Record results.

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The following is a chronological list of duties for the Computer Science Contest Director.

CS Contest Director (CSCD) Duties (before the contest day)

- Appoint additional personnel to assist in running the district Hands-on contest. For a 6-8 team district the CSCD will need:
 - 1 or 2 assistant judges - The CSCD along with the additional judges will judge solutions submitted by the contestants. Coaches from district schools are encouraged to act as judges.
 - Appoint a scorekeeper and archivist - These may be separate or combined positions or the CSCD and the assistant may do this.
 - The archivist backs up solutions submitted by teams prior to them being judged
 - The scorekeeper records results of contestant's solutions using the provided scoring program
 - Appoint 1 room monitor (Coaches or willing teachers are good room monitors)
 - The room monitor will assist with checking teams in and then seat them.
 - The room monitor will circulate in the room to see that all teams are adhering to contest rules both before and during the contest.
 - The room monitor will supervise the runners when they are in the contest area.
 - Appoint 1 or 2 runners to work under the supervision of the room monitor (this may be the 4th non-programming team member from district teams)
 - The runners pick up solutions from the contestants and take them to the judging area to be archived, judged, and scored
 - The runners also return judged submissions to the teams
- Create **Precontest** team packets. For each team you will need the following.
 - An envelope (10 x 13) clearly marked "Precontest Materials" that contains:
 - One copy of the dry run problem (dry run is problem number 0).
 - 3 manila run envelopes (9x12).
 - 7 run sheets with team number and problem number (Dry Run and 1-6) filled in.
 - 4 Query sheets. (colored paper).
 - One Verification sheet (a different colored paper).
 - One disk with the student data for the dry run problem. (This is on the Contest CD – the contest director must make one copy per team).
 - Label the Precontest team packet envelope with the team's name and number.
- Create **Official Contest** team packets. For each team you will need:
 - An envelope (10 x 13) clearly marked "Official Contest Materials – DO NOT OPEN UNTIL TOLD TO BY THE CONTEST DIRECTOR". In each envelope, put:
 - One copy of the problem set
 - 6 sheets of clean paper for teams to use for scratch paper.
 - A disk containing the sample data files as stated in the problems. (This is on the Contest CD – the contest director must make one copy per team).
- Create **Judges packet**. for the grading room:.
 - One envelope (10 x 13) clearly marked "Judging Documents – DO NOT OPEN UNTIL TOLD TO BY THE CONTEST DIRECTOR". Keep secure until the contest begins. In this envelope, put:
 - One copy of the problem set for each judge.
 - One copy of the judges output for each judge to use for grading.
 - One envelope with 7 copies of the Acceptance slips for each team. (if you have 5 teams, you need 35) and pens, sticky notes, etc. needed for grading.

- Create **post-contest** team packets. For each team you will need:
 - A disk marked "Post-contest Materials" (Clearly label the disk as "Post-contest Materials – DO NOT OPEN UNTIL AFTER THE CONTEST"). On each disk, put the following files:
 - the problem set.
 - the sample data files.
 - the judges data files.
- See that the judging software is installed on the judging stations (Java JDK 6.0 required) **It is strongly recommended you install and verify the judging environment works several days prior to the day of the contest. This will allow you enough time to resolve any problems you may encounter due to your school's computer systems and / or security measures.**
 - Install the scoring program for the Scorekeeper.
 - Install the archiving software for the Archivist.
 - Install the judge's data on the judging stations. If you use the provided judging environment, the judging data should be installed automatically.
 - Test the judging environment by running the solution to the dry run. This will test the judging software. A solution to the dry run is provided on the judging disk or can be downloaded from the UIL web site at www.cs.utexas.edu/~scottm/uil
 - Test the Scorekeeper's software, and the Archivist's software.
 - If you wish to use the provided scoring program install that software on the computer that will be used by the archivist / scorekeeper. Instructions for the scoring program are on a separate sheet.

CS Contest Director Duties (contest day)

- Obtain signs from the Meet Contest Director and post them to identify each station and team area.
- Ensure judging, archivist and scorekeeper stations are set up.
- Ensure Precontest Material packets are ready for distribution as students check in.
- Ensure Official Contest Materials packets are ready for distribution at the beginning of the contest.
- Train judges, archivist, and recorder on the software and their duties.
- Train runners on their duties.
- Ensure Judges packets are ready for distribution after the contest begins.
- Ensure Postcontest packets are ready for distribution after the contest ends.
- Give name tags to contest personnel.

CS Contest Director Duties (60 minutes prior to the start of contest)

- **Check-in:** CSCD or an assistant will check teams in and confirm the members' names.
- **Team Members:** In a Hands-on programming contest, teams consist of three members. If a team has four members the coach decides which three members participate in the Hands-on competition. There must be at least 3 members on the team to compete in the Hands-on competition.
- **Precontest Packets:** Give the teams their Precontest Materials packet as they check-in.
- **Dry run:** At check-in, explain to each team the process for submitting their dry run solutions.
 - The dry run problem is a simple problem to insure understanding of the contest operations and to be sure the contestants, the runners, archivist, judge and recorder are all working together..
 - The dry run problem is in the Team Precontest Materials packet and is also posted on the UIL Computer Science site. Teams should have a working version of the solution prior to coming to the contest. If not, they should write the solution as soon as they have their system set up.
 - After the teams have their computer system set up, they are to place the source code for their solution to on a floppy disk and place the disk and their completed dry run run sheet into the dry run run envelope and give it to a runner.
 - The runner will take the run envelope to the archivist, who will archive it and give it to the judge to be judged.
 - The judge will compile and run the contestant's solution using the judging data. Expected results are compared to the actual results from the contestant's solution.

- The judges will then record on the run sheet if solution is accepted or rejected and complete an Acceptance sheet if the solution is correct. Then place the disk, run sheet, and Acceptance sheet, if earned, into the run envelope. Give the run envelope to the scorekeeper.
- The scorekeeper will record the results and give the run envelope to the runner who will return it to the contestants.
- Teams may continue to submit solutions to the dry run problem until they get it correct or until the time for submitting the dry run is over.
- Contestants may confer with their coach in the contest room during the dry run process.
- **Monitoring:** The CSCD or an assistant will monitor the contest room as teams set up their computer systems and complete their dry run.

CS Contest Director Duties (30 minutes prior to the start of contest)

- Ensure teams have a single computer system.
 - Each team is allowed one computer consisting of a single monitor, keyboard, and system. If laptops with external keyboards are used, the laptop keyboard must be covered in some way. Teams may use one printer, but a printer is not required. The team may have a back-up computer system provided it is stored in a near-by area (e.g. front of room).
- Ensure all previously written programs have been removed from the contestants' computer systems.
 - **Allowed Software:** The computer may be loaded with normal software (such as word processors, etc.), the Java SDK, a development environment (such as JCreator, Eclipse, NetBeans, or whatever IDE the team chooses),
 - **Allowed resources:** The documentation for the Java API's, and the API's themselves may be installed on a team's computer. Teams may also have two textbooks or references that are reasonably free of written notes.
 - **Non-allowed resources:** It is important that the computer system be free of any code written by the contestants prior to the contest such as solutions to practice problems, solutions to prior contest problems, or programs written in class. A book on a CD or on a team's hard drive is not an acceptable reference and should be removed from the computer system.

CS Contest Director Duties (15 minutes prior to the start of contest)

- Assemble contestants and coaches for instructions. Go over contest rules on the front cover of the contest problems and go over any pertinent procedures from the Computer Science section of the UIL C & CR.
 - There are 6 problems on the test.
 - Explain the scoring.
 - Each correct solution will score 60 points.
 - Each incorrect solution will score -5 points only if a correct solution is eventually submitted.
 - The contest will last for 60 minutes.
 - Teams may work on the problems in any order.
 - Go over the contest mechanics. When they have a solution:
 - Complete a run sheet with their team number and problem number on it
 - Save the source code (, java file) to a disk
 - Label the disk with the team number and problem number.
 - Place both the run sheet and the disk in the run envelope for that problem.
 - Hold the envelope HIGH in the air for a runner to collect.
 - The runner will return the problem as soon as it is judged and recorded.
 - Query form - The Query form is used to pass information between a team and the judges. The Query form is filled out by a team and given to a runner to take to the contest director. The purpose of the form is to resolve ambiguities or misstatements in a problem. They are not to be used to give teams an advantage, extra information, or hints on how to solve a problem. The contest director must decide on the appropriate response in consultation with the other judges. It may well be that the appropriate response is for the team to read the problem statement more carefully and look at the given examples. If a clarification is in fact required

due to ambiguity or a problem misstatement, all teams should be made aware of the resolution.

- The judging data will include test cases not shown on the problem statement sheet.
- When the 60 minutes is over, you will say "Stop". At this time, you will only accept solutions that are already in a run envelope and the run envelope is in the air.
- When the contest is over, teams will assemble their Acceptance sheets and complete their Verification sheet. Each team will then give their Verification sheet to a runner who will take it to the judging room.
- Students may not disassemble their computers until all judging is complete and all protests have been resolved. Once a team disassembles their computer system, they forfeit their right to protest.
- Instruct the teams to delete their dry run solution from their computers.
- Answer any final questions.
- Ask the coaches that are not helping to run the contest to leave or be room monitors.
- Distribute Official Contest Materials. Instruct students not to open them until they are told to "Start".

CS Contest Director Duties (Conducting the Contest)

- Pass out the Official Contest packets.
- Set the timer to 60 minutes.
- Announce "Start" and start the stopwatch. This is the official start of the contest and contestants may open their contest envelope and have one hour to submit solutions.
- When a team has a possible solution to a problem, they place the source code on a disk, place the disk in a run envelope with a run slip and give it to runner.
- The runner takes envelope to archivist.
- **Archivist Duties:** The archivist:
 - Records the team number and problem number for the submission.
 - Records the time the problem was submitted.
 - Backs up the solution submitted.
 - Gives the run envelope to a judge.
- **Judges Duties:** Submissions should be maintained in a first in first out order. As judges become available they should judge the oldest submission.
 - If using the judging environment provided, follow the instructions on the "How to Use the Judging Environment" instruction sheet.
 - If not using the judging environment:
 - Create a folder for each team.
 - Copy the file to the team's folder.
 - Remove the disk from your floppy drive.
 - Compile and run the program submitted.
 - In either case, use these judging guidelines:
 - White space differences at the end of lines or after the last line of output are never significant and should never cause a problem to be judged as incorrect
 - If the differences do not seem material to the problem being solved, err on the side of accepting the solution. For instance, if a problem is about performing a complex calculation, be flexible with output formatting. On the other hand, if the problem is all about formatting, then be a stickler.
 - Above all, be consistent with your judging.
 - If a submission is correct, mark accept on the run sheet and complete an Acceptance sheet.
 - If a submission is incorrect, mark reject on the run sheet and mark one of the comments on the run sheet. At the state meet we generally only use a small number of the available comments:
 - "Does Not Compile" is used for submission that suffer compile errors.
 - "Run-time Error" is used for submissions that suffer a runtime error or exception.
 - "Failed Judges' Test Data" is used for any cases where the submission compiles and runs but whose output does not match the expected answers.

- "Time-Limit Exceeded" is used when a submission results in an infinite loop or the program does not end. None of the problems in the district problem set require a large amount of computation. A guideline for when to halt a team's program is 2 minutes.
- After judging the solution and marking the run sheet, the submission disk, run sheet, and if earned, the Acceptance sheet go back into the run envelope which is given to the Scorekeeper.
- **Scorekeeper Duties:** The scorekeeper records successes and failures of the contestant's solution using the provided scoring program and then returns the run envelope to the runner.
 - Correct solutions are awarded 60 points less any penalty points.
 - Incorrect solutions are penalized 5 points for **EACH** time an incorrect solution is submitted **ONLY WHEN** the correct solution is finally submitted. For example:
 - Team A submits two incorrect solutions for problem 3 and never submits a correct solution. Team A will receive no points and will be assessed no penalty points for problem 3.
 - If Team B submits two incorrect solutions for problem 4 and then submits a correct solution, Team B will receive 50 points for problem 4. This is 60 points for submitting the correct solution minus 5 points for EACH incorrect submission (a total of 10 penalty points).
- The runner returns the run envelope to the team.
- If a team's solution is judged incorrect, the team may rework their solution and resubmit their new solution. Teams may make as many submissions for a given problem as they wish.
- All teams should be notified when 15 minutes is remaining in the contest.

Note: Coaches may fill any of these positions and one person may serve in more than one of these positions.

CS Contest Director Duties (Ending the Contest)

- At the one hour mark teams shall be told to stop.
- Accept any solutions **in a run envelope that was in the air when the signal to stop was given.**
- No more submissions are to be accepted.
- Tell students to leave their computers set up until judging is complete. Failure to do this will cause a team to forfeit their right of appeal.
- Have teams to complete their Verification forms and turn them in to the room monitor.
- Complete judging.
- Complete scoring. Teams are ranked based on points earned. The maximum possible score is 360. Ties are not broken. Please remember, the results of the Hands-on contest do not affect which individuals or which team advance to the regional competition and it does not affect the district sweepstakes competition. At the district level those are based solely on the results of the written test.
- Verify grading with contestant's Verification forms and resolve any discrepancies.
- Collect all official contest materials. These may be returned to teams when other official district materials are returned.
- Assemble coaches and contestants again and announce results.

Other Issues:

- **Resolving Conflicts:** As contest directors, you are designated UIL officials. As such, you have the authority to make decisions regarding the management of your contest to ensure that it is conducted according to UIL rules. You also have the authority to settle any disputes that might arise in accordance with UIL rules, though we certainly hope there won't be any of those. However, if a situation should come up that you are not sure how to resolve, or if you have any questions regarding rules, procedures, etc., please feel free to contact Mike Scott at scottm@cs.utexas.edu or (512) 217-4325 if a more immediate response is required.
- **Acceptable Media:** A few words on what media to use for submission of material: The suggested media is floppy disks but alternatives to floppy disks for hands-on programming may be used. Contest rules do not require that contestants use floppy disks, but we continue to recommend a floppy disk as the best media for the contest -- copy times are faster than for burning CD's and they are more readily re-usable, and they are still much cheaper than flash drives. We do realize that many new computers do not include floppy drives. We recommend that teams bring an external floppy drive, but you may have some teams show up who do not have one and want to use other media. There is nothing in the rules that would prohibit the use of other types of media, but they need to be aware of the potential disadvantages. For example, you may have prepared your sample data for distribution to contestants on floppy disk, and it may not be feasible for you to make copies in other formats. In that case, contestants without floppy drives would need to create their own sample input data using what's printed in the problem set. (What they get on disk is identical to the sample data printed in the problem set.) For flash drives, they need to understand that they're not going to get their drives back immediately, so if they only have one or two flash drives it may make it difficult for them to submit multiple solutions. Judging should always be "first in, first out" regardless of media type, so a team with a flash drive should not receive priority over a team using floppies. In terms of judging with different types of media, the only consideration is being sure that you're reading from the correct drive. The judging script is set up to read from a single drive, normally the A drive. If there is a mix of submission media one solution is to change the location for the judging program to a directory on the judging computer and copy all submissions to that local directory.
- **Feedback:** Finally, we would like your feedback. Please complete the UIL Computer Science District Hands-on Pilot Evaluation Form. You may mail, email, or fax your comments. If you want to mail your comments please mail the completed form to:

Mike Scott
Department of Computer Sciences
Taylor Hall 2.124
1 University Station C0500
Austin, TX 78712-0233

Or, fax it to Mike Scott at (512) 471 - 8885.

Or, email scottm@cs.utexas.edu (there is an electronic version of the form on the materials CD).

Thank you for your willingness to participate in the pilot of the UIL Computer Science hands on programming competition at the district level and all of your hard work.