

2002 Atlantic Provinces Computer Science Programming Competition

Welcome! **Please read the following instructions carefully.**

Each team is given a new account. Please keep it confidential until after the competition is over. The judges and coaches should not know which team is which.

Your team login is _____ with password _____

Do not put any information which would identify your team in your programs.

Be careful when you first login that you are connecting to `hopper.mta.ca`.

You may ask for help at any time on such things as how to login, how to edit/compile/print, etc. People who can help are sitting at the front of each room and will be wearing a “HELP” nametag.

Each team must use only **one** computer. You must not connect to any account other than the one assigned to you for this competition. You must not connect to the Internet either. Everything you do on the competition account will be logged.

There is a printer set up for you to use but contestants must not go to it. Ask your friendly “HELP” person for your printouts to be given to you. **Only text files may be printed.**

The competition runs from 1:00pm to 6:00pm. Refreshments will be delivered in the middle of the afternoon. Come up to the front to avail yourselves of the food and drink but **DO NOT** take food or drink back to the computer area.

After the competition is over, the pizza party will begin. Pizza will be served from 6:00pm to 7:00pm in McConnell Hall East. Consult your campus map for the exact location. The Blundon Lecture begins at 7:00pm back in the Dunn Building. The drink ticket that came in your registration kit is for use at the post-Blundon lecture reception at 8:30pm over in Convocation Hall.

There are 6 problems for you to try to solve in 5 hours using one computer. The problems are named A, B, C, D, E, F. Please write your solution in a file with the same prefix. For example, your solution to problem A should be in file `A.java`, or `A.c` or `A.cc` depending on the language you use. Note the suffix `.cc` for C++. The judge’s software is setup for this only. Solutions to problem B would be in `B.java`, `B.c` or `B.cc` and so on. Only these filenames will be accepted. Please put your entire solution to each problem in one file. Java files should have only one class which is public.

You may use Java or C or C++. The commands to compile are:

- Java: `javac A.java`
- C: `gcc -o A.exe A.c -lm`
- C++: `g++ -o A.exe A.cc -lm`

This is for problem A. The commands for problems B, C, etc. are similar. Notice that the executable program must be `A.class` for Java or `A.exe` for C/C++. The math library `-lm` is probably not required for most programs.

Note that we are using input redirection for all the problems. Your programs should always read input from `System.in/stdin/cin` depending on the language. (Check the problem description.) Do not open any files!

Each of the three problems has one or two data files that you may use to test your program. These are stored in a directory `/apics/data/`. The names of the data files will be `A1.dat`, `B1.dat`, etc. For example, for problem E there is one file `E1.dat` and for problem D there is `D1.dat` and `D2.dat`. The other problems also have 2 data files that you may use for testing. In addition, the judges have some other data files they will use to see if you have handled all the cases. Each data file has a matching output file. For example `A1.out` contains the output expected when `A1.dat` is used as input. These files are also in `/apics/data/`. To run your A program with the first data file use one of:

- `java A < /apics/data/A1.dat` (for Java)
- `./A.exe < /apics/data/A1.dat` (for C/C++).

When you have a problem solved you need to send the program to the judges who are using the username `judge`. There is a special command setup to do that:

```
/apics/submit X Y
```

(where X is one of A, B, C, D, E or F; and Y is one of java, c or cc). E.g., `/apics/submit A java`

Judges will respond in the order that messages are received. Sometimes there will be a delay if they have to confer or many messages arrive almost at the same time. The judges will record the time that solutions are sent to them not the time that they reply. Judges will reply by sending a one-line message to your terminal. In case you miss it a copy will be in file `/apics/log`. They will send you one of 6 messages:

1. solution to problem X is accepted
2. program for X gave wrong output for some test input file
3. program for X gave no output for some test input file
4. program for X gave output improperly formatted
5. program for X did not compile
6. program ran more than 2 minutes and was stopped

The winner will be the team that solves the most problems and gets a #1 reply for each. In case of a tie it will be decided by time in the usual peculiar way. Each team is will be charged a 15 minute penalty for each submission which receives a reply #2-#6. However, all teams are allowed one incorrect submission without penalty. If you have trouble running the `/apics/submit` program because, for example, your file has the wrong name, this will NOT count towards a penalty.

For each team time is calculated as the sum of the times from the start of the competition until each problem is correctly submitted. If there are $n > 1$ incorrect submissions a penalty of $(n - 1) * 15$ minutes is added.

The judges may post the results so far in file: `/apics/results` However, if they are busy it may get out of date. Towards the end of the competition they will stop updating the results until it is all over.

During the competition you may use printed reference materials. You are not allowed access to the WWW or to connect to other systems. Everything you do using the accounts for this competition is monitored/logged.

Good Luck!