Welcome to Senior Computer Team!

SCT Officers

September 14, 2018

1 Introduction

Welcome to the TJHSST Senior Computer Team, widely regarded as one of the most awesome high school computer teams in the United States! We meet weekly to practice and enhance problem-solving skills involving programming. Our focus is on the USA Computing Olympiad (USACO), but we also compete in several other programming contests. Over the year, we hope that you will all remain with us as we learn and compete together.

- Sponsor: Ms. Galanos

- Captain: Daniel Wisdom

- Co-Captains: George Tang, Jongwan Kim

- Statistician: Charlie Gunn

We or any other returning members would be more than happy to answer any questions you may have about SCT, computer science, school, or life in general.

2 First day signups

First things first: please make sure you're signed up for both of the following.

1. *Mailing list.* We will use this to send out weekly announcements and lectures, so please read these emails! They are short and don't bite, we promise.

2. *Codeforces group.* This is where we will hold SCT contests. Codeforces also holds regular contests of its own, which we encourage you to do! If you do not have a Codeforces account, you should create one!

3. *YouTube channel.* This year SCT will be putting together a YouTube channel with all of the lectures recorded and edited.

If you aren't signed up for those things, please use the following link to sign up for today only.

`https://goo.gl/XaFx9m`

3 Schedule

SCT meets every Friday during A block. (ICT meets during B block, which you should consider joining as well.) A typical block consists of lectures focused on USACO topics. As has been done in past years, we will split lectures into two groups: one for bronze/silver and one for gold/platinum. We also will occasionally provide time for coding practice.

4 Contests

4.1 In-house contests

We will hold interactive "Case Study" sessions in SCT meetings before major contests (e.g. USACO), in which we will choose a couple of questions to academic solve (no coding). These will emphasize topics we think will be important on the contest, and will also serve as review for prior lectures.

We will also occasionally hold contests in our Codeforces group. Most will be practice contests, which are for your benefit. We may sometimes hold contests after school as well, depending on demand.

4.2 USACO

USACO is a competition administered online with monthly contests in December, January, and February, culminating in the US Open in April. There are four divisions in USACO: bronze, silver, gold, and platinum, each with their own set of problems for each month. All contestants start in the bronze division and advance by performing well in contests; top scorers are selected for USACO training camp. Our curriculum is centered around USACO, so we strongly encourage you to participate in it. For USACO, use a language you are comfortable with, but not all languages are equal. Problems depend on the time your solution takes to run, so slower languages like Python will be at a disadvantage.

Language Hierarchy

- **C++** is the fastest language on USACO. 80% of campers use C++. It has a small advantage over Java.

- **Java** is fast enough to solve almost all problems, even in Platinum division. Sometimes, a poorly written Java program (using the same algorithm) will run out of time, while a similarly poorly written code in C++ might pass. Only switch to C++ if you have practiced on C++ for a while and are almost as comfortable as on Java.

- **Python** is fast enough for bronze problems, most silver, and some gold. There will be gold and especially platinum problems Python is just too slow for. If you know Java and have passed bronze, use it above Python

Disclaimer: This list is based on USACO contests, primarily focused on how fast the code will run. I use Python for tons of things where speed is unimportant. There's a time and place for almost every language, but not necessarily in USACO.

4.3 Travel contests

We will compete in a few local contests throughout the year which limit the number of TJ teams. We will announce these contests and ask for volunteers. Selections will be determined through competitive programming proficiency and wanting to give more people a chance. This will include USACO rankings. Almost all contests accept Java, but other languages, such as C++, are helpful.

Most of the contests take about 4-6 hours, including set up, practice, and awards. They tend to be on Saturdays, but we will send out exact details when the time comes.

4.4 Other university contests

The following contests, however, do not have a team registration limit; you may therefore form teams on your own.

1. *PClassic* – This contest takes place every fall (November) and spring (April) at the University of Pennsylvania. You may form teams of up to four, in either the novice or standard divisions. The contest length is 4 hours, and the programming language is Java or Python. Website: `http://pclassic.org/`.

2. *VT HSPC* – This contest takes place in early December, on TJ campus through the Internet. You may form teams of up to **three**. The contest length is 4 hours, and the programming language is Java, Python, C, or C++. Website: `https://icpc.cs.vt.edu/`

5 TJIOI

This year, we're once again hosting TJIOI, a programming contest for local high school students. We could definitely use your help in writing problems, sorting out logistics, designing t-shirts, etc. Please contact us at `tjioiofficers@gmail.com` or talk to a captain if you're interested!

6 First day contest

For the first day, we've found some practice problems for you to do on Codeforces. The practice contest will be open through next Wednesday. You can find it by navigating to the Codeforces group.

7 Resources

As mentioned earlier, make sure you're signed up for our mailing list and Codeforces group! If you are not in the TJHSST SCT Facebook group, please join that, too. We post announcements there frequently. Also don't forget to subscribe to the YouTube channel in case you miss any meetings or you want to explore past lectures.

- Codeforces group: `http://codeforces.com/group/M4wsRWBHyZ/`

- Facebook group: `https://www.facebook.com/groups/tjsct/`

- YouTube channel: `https://goo.gl/9fzBRd`

On our website, you can find links to many resources, including the above links, past lectures (including this one), and other resources, including Samuel Hsiang's excellent Crash Course Coding Companion.

`https://activities.tjhsst.edu/sct/`

If you have questions, concerns, feedback, anything — please don't hesitate to talk to any of the officers, or shoot us an email at `tjhsstsctcaptains@gmail.com`. We look forward to seeing you throughout the coming year!