Primary Programming Olympiad 2014

Computer Programming Contest for Elementary School Students

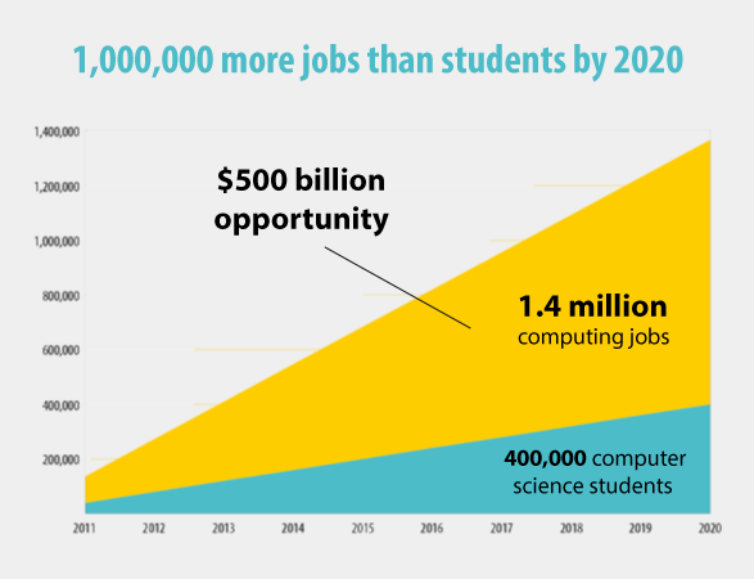
VISION

Nowadays, it is not a surprise for a two-year-old toddler to sit at a computer, grab the mouse, click on a browser, search for her gaming site from the bookmarks, and launch her favorite game online. So it should not surprise anyone, when the same child, a decade later, opens an integrated development environment (IDE), and starts a new project in her favorite programming language. Programming is fun and there is no age limit to learning it. With this in mind, volunteers at Silver Oak Elementary started courses to teach basic programming using NetBeans IDE and Java. To their surprise, students were enthusiastic to learn about data variables, loops, graphics and all the things that the instructors learned in college in the 90s.

The vision of the contest is to provide Silicon Valley elementary students with an opportunity to explore their computer skills, and accomplish their first achievements in computer programming.

BACKGROUND

Code.org cites that the shortage in computer science related jobs will be about 1 million by 2020. The total impact to the US economy is estimated to be about $500B. By 2020 our current 4th, 5th and 6th graders will be choosing college education and it is truly a national interest that they will be seriously considering to move in Computer Science related academic paths. Moreover, looking at the shortage of programmers by 2020, they will be able to sponsor their own education by creating some of the game-changing computer applications or designing the next disruptive innovation of that era.



Source: Code.org based on statistics from Bureau of Labor Statistics, National Science Foundation, College Board, Association of Computing Machinery, http://www.code.org/stats

The organizers of Primary Programming Olympiad 2014 believe that introducing a programming contest for elementary students with healthy publicity will motivate them to increase interest in computer programming and science. There is no better place for the venue than Silicon Valley, the metonym for the

American high-technology sector. Becoming the "Best Primary Programmer of Silicon Valley" will be a unique opportunity for the students to study and work for in this magical field of science.

Primary Programming Olympiad 2014 will be sponsored and organized by the parents of Silver Oak Elementary students. It will be open to any elementary students who can solve the given entry problem. Depending on the number of applications the organizing committee will need sponsors to develop the contest from a local one-time event in 2014 to a nationwide annual event in the long-term. The mission of the parents is to find sponsors and equip Silver Oak Elementary with the latest technology capable of facilitating such events.

CONTEST ORGANIZERS

Organizers are volunteers from the Silver Oak Elementary Parent Teacher Organization (SOEPTO) where SOEPTO is a 501(c)(3) non-profit organization with Tax ID#77-0412332. One of the key missions of SOEPTO is to enrich education at Silver Oak Elementary with technology and install high-tech equipment in the class rooms through donations. Within this mission the volunteers see Primary Programming Olympiad as a key element to enrich educational offerings of the school and establish a demand for learning computer programming at an early age.

CONTEST ANNOUNCEMENT

Silver Oak Elementary is proud to announce that it will hold a computer programming contest for elementary school students of Silicon Valley. The mission of the programming contest is to encourage elementary students to learn the basics of computer programming. The student will have the opportunity to meet with other students their age who share the same excitement about programming. They will also have the chance to compete for the title "Best Primary Programmer of Silicon Valley," and go home with a nice tablet computer.

SPONSORSHIP OPPORTUNITIES

1. Participating in judging committee (motivation to meet key figures of Silicon Valley)
2. Providing prizes for the winners (computers, developer subscriptions, integrated development environments, scholarships, etc…)
3. Providing special prizes for different categories (i.e. by age group)
4. Donating lap-top computers and carts to Silver Oak Elementary to enable students without computers to participate in the event
5. Maintaining the computers and other equipment at the venue to troubleshoot issues
6. Holding an exhibition for the participants and parents during the event (technology presentations, product showcase, etc…)
7. Sponsoring lunch for the participants
8. Giving out gifts for participating in the contest (shirts, USB memory sticks, gadgets, etc...)
9. Display banners at the event venue for a donation

CONTEST AWARDS

1st Prize: Chromebook
2nd Prize: 7" 32GB tablet computer
3rd Prize: 7" 16GB tablet computer

www.primaryprogrammers.org

#PRIMARY#PROGRAMMERS=

PROGRAMMING CONTEST

Participants: This contest is opened to elementary or home-schooled students (12 and under) in the Bay area. Parent and/or legal guardian must accompany students.
Venue: Silver Oak Elementary School
Address: 5000 Farnsworth Drive, San Jose, CA 95138
Date: May 10, 2014
Schedule:

9:00AM - 9:30AM	– Introduction and Setup
9:30AM - 11:30AM	– Problem Solving
11:30AM -	– Lunch
11:30AM - 1:00PM	– Judge Committee Review
1:00PM - 1:30PM	– Award Ceremony

APPLICATION PROCESS

1. Applicants must solve the Entry Problem below to qualify.
2. Applicants must attach the source code, in any programming language, as well as a written summary of the solution to the application.
3. Applicants must send an email that includes the student's name, date of birth, parent's name, phone number, and the commented source code to primaryprogrammers@gmail.com by April 19, 2014.
4. For details on the contest and on-line application visit www.primaryprogrammers.org.

ENTRY PROBLEM

Choose a programming language you like and write a program meeting the following requirements:

Problem Description

The task is to count the frequency of a character in any given text.

Input

The user should be able to type in a text. After the text is inputted, the computer will ask for a character.

Output

When a character is entered, the program will return with the number of occurrences of the character. If the character is *'x'* or *'X'* the program will return with the frequency and exit.

Sample Input

> Enter text: Programming is real fun

> Character: a

Sample Output

> Character 'a' is found 2 time(s)

> Character 'x' is found 0 time(s) – exiting…

CONTEST RULES

1. Parent and/or legal guardian must accompany students to participate in the contest.
2. Participants are allowed to bring their own device for the contest. There is a limited number of Apple MacBook computers available on-site containing the latest version of NetBeans. Participants must indicate in their application whether they desire to use one of the available computers.
3. Participants are allowed to use any programming language and development environment to create the solutions for the programming problems.
4. Participants may use any materials, soft or hard copy, during the problem solving part of the contest.
5. Participants may connect their devices to the Internet, and may utilize Internet searches.
6. Participants must solve their problems individually. Communication about solving the problems is not allowed onsite or by using Internet-enabled communication channels such as e-mail, chat or voice over IP software. Usage of mobile phones is not allowed during the contest.
7. Participants may not leave the contest during the problem solving part, other than to visit the restroom.
8. Each participant may submit one solution.

PROBLEM PRESENTATION AND JUDGING

1. Participants will save their work on their devices at the end of the problem solving session.
2. Participants will power-down or hibernate their devices after saving their work.
3. Participants will present their solutions to the judging committee, individually.
4. After a short verbal summary of the problem and its solution, the participants will demonstrate their solution to the committee using their powered-up device.

CONTEST SCORING

1. All solutions will receive scores from judging committee, regardless of completeness.
2. Participants will receive a score based on the following criteria:
    a. Clearness of understanding the problem and the desired output (Scores: 1 to 5)
    b. Design of the solution (Scores: 1 to 10)
    c. Correctness of the solution (Scores: 1 to 10)
    d. Additions to the original problem to enhance functions of the solution (Scores: 1 to 5)
    e. Overall presentation and solution style (Scores: 1 to 10)
3. The participant with the highest score wins the contest and is awarded first prize. The second and third highest scores will receive prizes, accordingly.
4. In the event of a tie for first, second or third places, the committee will hand out additional problems to the participants and the first correct solution will receive an additional point to break the tie.