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Date: 9/25/2017

Unit: C++

Grade: 9

Lesson Current Events in Computer Science and

Time 85 minutes

Topic: Information Technology (*research*)

Allotted: (1 class period)

Curriculum Standards:

ISTE Standards for Computer Science Teachers

- **1.d** **Demonstrate an understanding of the role computer science plays and its impact in the modern world.**

CSTA K-12 Computer Science Standards

- **3A-IC-24** **Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.**

Objectives:

- Students will identify a current issue or event that interests them involving Computer Science or Information Technology.
- Students will research their topic and prepare a presentation that describes the impacts of computing on the modern world.

Materials:

- Everyone will require a computer with Internet access
 - Google Chrome web browser
 - Cloud 9 IDE (www.c9.io)
 - Securing the Human newsletter (https://securingthehuman.sans.org/resources/newsletters/ouch/archives#ouch_archives)
- Worksheets for students
 - Mad Libs worksheet 4 (*homework*)
 - Research Project worksheet
- Whiteboard with dry erase markers (*at least 4 different colors*)
- Large poster board or paper (*for student presentations*)
 - Markers (**at least 6 sets**)

Procedures:

- **Warm-up (5-10 minutes)**
 - Students will open the Cloud 9 IDE and load up their Mad Libs program that they wrote for homework. After verifying that it functions, students will trade computers so that they can test out Mad Libs written by other students.

- **Motivator/Bridge** (10-15 minutes)
 - Once students have been to 2 or 3 different computers, everyone will return to their original seats to have a group discussion about similarities and differences between the Mad Libs.
 - Unlike previous lesson discussions, this time the teacher will try to focus on how differences in coding can result in vulnerabilities, and how those vulnerabilities can have a big impact on the people that use the software.
 - *Teacher will write any interesting topics on the whiteboard.*
- **Group Activity** (40-50 minutes)
 - Students will be broken into groups of 2-3 students, and each group will receive a **research project worksheet**, which will guide the groups on researching the topic they choose.
 - Groups will be directed to the SANS Ouch! Newsletter, which contains information about current events in CyberSecurity, which students can use as a starting point for their research.
 - Students will have their choice of topic, as well as their choice of presentation media (*PowerPoint or poster board*).
- **Summary / Closure** (5-10 minutes)
 - Students will discuss very briefly how they felt about their research topics, as well as their progress on the presentations. Students will be informed that they will be presenting on their topics the following period, and that the presentation will count as a Major Summative Assessment.
 - Students will be informed that there will be a Unit exam during the lesson following their presentations, and that the presentation topics will be used to generate a few questions for that exam.
 - Students will receive **Mad Libs worksheet 4**, which will consist of writing code to produce the same results as a Mad Libs activity.

Assessments:

The homework activities will count as **Minor Summative Assessments**, and be scored using the following criteria. Students will be made aware of the scoring criteria, and how it relates to evaluations in real-world situations (such as job performance).

- 2 points – Turned in on time
- 1 point – Code comments
- 1 point – Code actually works

The presentation resulting from the research done in this lesson will count as a **Major Summative Assessment**, and the information presented will also be used to generate questions for the upcoming Unit exam.

There will be **formative assessment** done throughout the lesson, as the teacher will walk about the room, checking student performance during each of the tasks.

Extension Activities:

The primary activity for this lesson is the research project, and students are allowed to be as detailed or creative in their presentation as they like, so long as it fulfills the requirements of the rubric. For groups that finish early, the teacher can prompt the students to research more, or provide more figures or data to support their research.

Review / Reinforcement:

- Homework
 - **Mad Libs worksheet 4** – The students will be given a worksheet, and required to write code that will emulate a Mad Libs activity. The student will hand write the code on the worksheet, which should help reinforce the lesson objectives, and will later type the code into Cloud 9 to verify that the code works as expected.
 - **Continue work on presentations** – For groups that didn't finish their presentation in class, those groups can continue to work on their presentations at home.