What is Kernel?
2018 Trail Event – WOSO Elementary Science Olympiad

1. **Description:** This event focus on computer concepts related to kernel and operating systems. The objective is to answer questions related to operating systems, kernel, CPU, memory, disk I/O and networking.

   Team Size: Up to 2 **Impound:** None
   Eye Protection: None **Approximate Time:** 30 mins

2. **Event Parameters:**
   a. Each team will be given a written test with 50-100 questions and a scantron to answer the questions.
   b. Teams will be allowed to bring one sheet of paper (letter size and both sides) of notes.
   c. Test may be conducted as station based.

3. **The Competition:**
   a. Students should know basic concepts of operating systems, kernel, CPU, memory, disk and networking.
   b. Concepts
      i. The bootloader
      ii. The kernel
      iii. Daemons
      iv. The shell
      v. Graphics Server
      vi. Desktop Environment
      vii. Applications
      viii. X-Server
      ix. Types of OS and Kernels
      x. Process management
      xi. Device management & Device Drivers
      xii. Memory management
      xiii. Virtual file system
      xiv. Network stack
      xv. Various OS and Kernels (Windows, Linux, Mac OS, Android, iOS)

4. **Scoring:**
   a. High score wins

5. **Tie-Breaking:** Students will be given a problem to write code to solve a problem and this will be used as tie-breaking. Code with few lines of code and comments will be scored above others.

6. **Sample Resources/References:**

a. https://wr.informatik.uni-hamburg.de/_media/teaching/wintersemester_2014_2015/pk1415-introduction.pdf
b. https://linuxhint.com/linux-kernel-tutorial-beginners/
c. https://www.linux.com/learn/complete-beginners-guide-linux%20
d. https://developer.apple.com/library/content/documentation/Darwin/Conceptual/KernelProgramming/Architecture/Architecture.html
e. https://www.androidcentral.com/android-z-what-kernel
f. and many more…