Cross-platform benefits of the Java language

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Nowadays, with the development of the IT field, computer languages are becoming more and more popular; they provide services for daily work and study. In specific words, we use operating systems along with software every day. According to Hansen (1973), “An operating system is a set of manual and automatic procedures that enable a group of people to share a computer installation efficiently.”(p. 1) The operating system is used for managing the hardware, providing some functions, and providing an environment for the program to run on it (Silberschatz, Galvin, & Gagne, 2013). The program is a list of instructions to the computer to do some function, which is written by some computer program (Rouse, 2007). Nowadays, apart from Java, there are many popular computer languages such as Python, C, and Ruby. However, a problem in these computer languages is that different operating systems require different program languages. The reason is that the device-independent graphics is not provided, and it is necessary for programmers to know the details of the hard devices in order to illustrate the graphics (Chapman, 1999).

One of the problem’s drawbacks is that programmers need to write the same program many times base on different platforms. Before Java came out, programmers can hardly port programs between different platforms (Harold, 2015). It was an impossible idea for the programmers to run the same instruction on different hardware and operating systems. Java solves the problem that computer programs are not portable, and it saves time for the programmers and increases their efficiency.

Java promotes a great concept that solves the problem of the nonportable codes, and the concept is implemented through three components (Gilbert, 1995). Java has a famous slogan for the idea of being a portable programming language called “Write Once Run Everywhere (WORE)”. Although this concept saved a lot of time for the programmers, the implementation is not sophisticated at all. In simple terms, a device will compile and run the Java codes as long as Java Virtual Machine (JVM), Java Runtime Environment (JRE), and Java Development Kit (JDK) are installed onto it. These three components all have different purposes. The JVM is where the codes, which are written by the programmers, are being executed and compiled. Imagine the JVM as a machine box, then JRE would be a fancy packing box encased JVM since JVM is just a section of JRE (Rouse, 2005). JRE contains all kinds of key classes, which can be seen as the helper functions, are essential for the operation of Java programs (Jaschob & Riffle, 2012; Rouse, 2005). If we consider JRE and JVM are two boxes, then JDK would be the utmost toolbox that accommodates both of them (Grehan, 1997). The JDK includes all the tools and functions a programmer will ever need to use. All in a nutshell, the concept WORE made Java a portable programming language, and the JVM is where the codes are being translated to different languages for different platforms.

The portability of Java provides the programmers with many benefits. Portability means the computer applications can be used in platforms (devices), which are not where the applications were made, without rewrite the codes (Rouse, 2005). Since less work is needed to be done in the processes of duplicating programs for some of the main operating systems (e.g., Windows, MAC OS, iOS), it will save a lot of time and energy for the programmers and their companies. However, some problems come together with the idea WORE as well (Gilbert, 1995). The first problem is that if the codes were written in higher versions of Java while the clients only have some lower versions of JVM, the codes will not be able to run. The second problem is that the performance of Java is relatively slower than similar applications written in C and C++, resulting from the unnecessary occupation of memory in the devices (Gilbert, 1995). However, those problems were only been taken into consideration in the days that virtual machines cannot perform as required (Harold, 2015).

In conclusion, Java helps programmers work more efficiently by the idea of WORE, which achieved by the cooperating of JRE, JVM, and JDK. Even though Java has some limitations, it is a revolutionary computer language that solves an essential problem in the programming field. It would be better to use java if the program needs to be developed by more than one platform.

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