

平成25年度 大学院博士（前期）課程入学者選抜学力試験

英語 [90分]

注意事項

1. 試験開始の合図があるまで、この問題冊子を開かないでください。
2. 問題冊子（問題は1～5ページにあります）と解答冊子（解答用紙3枚）は別々になっています。解答冊子のみを提出してください。
3. 解答冊子の表紙に氏名と受験番号を、解答用紙のすべてに受験番号をはっきり記入してください。
4. 問題冊子や解答冊子に印刷上の問題などがあれば、静かに手を挙げて監督員に知らせてください。
5. 試験終了後、問題冊子は持ち帰ってください。
6. 問題ごとに配点が記されています。

Part 1 Reading Comprehension (55 points)

Read the article below and answer the following questions.

Two recent events have boosted Apple's dominance as a platform for computer programming. The first event was the development of an Apple supercomputer. The second event was a rapid increase in applications programmed for Apple.

The first event, development of an Apple supercomputer, was in 2003 at Virginia Polytechnic Institute and State University, USA. It was the third fastest supercomputer in the world [1]. It had a parallel cluster server speed of 36 teraflops. Flops (floating operations per second) are used to measure a computer's performance especially in the field of scientific calculations. The supercomputer was a product of a research project by a professor, some colleagues and graduate students. They combined 1,100 Apple computers to make this supercomputer. No huge conglomerate of corporations or financial investments were involved. Although the supercomputer cluster cost \$5.2 million, it was much cheaper than the supercomputers that ranked first and second. Virginia Polytechnic Institute and State University considered this project a financial investment. Since they had a supercomputer, they were able to apply for a portion of the \$1 billion research funding in the USA. The supercomputer was eventually used by the Genome Project to map the complete set of human genes.

The second event, a rapid increase in applications programmed specifically for Apple's iPhone and iPod Touch devices, started in 2009. In December 2009, it was announced that Apple's iTunes Store had one hundred thousand applications (called Apps) available, and that three billion downloads had occurred in just 18 months. In April 2012, the number of Apps surpassed five hundred thousand, and twenty five billion downloads had occurred.

The two events were significant for programmers (also known as developers). The first event showed the power of the operating system of Apple computers. The second showed that programming in the Apple computer market makes money. For independent programmers, these are two very important considerations before they invest time, effort and financial resources into writing programs for the Apple system. For instance, Apple's App Store is generating \$5.4 million every day for its top two hundred Apps. Moreover, since 2011, Apple has paid developers \$4 billion from sales of applications.

Of course, Apple has competition. Fifty percent of the smartphones sold in the last

quarter of 2011 used Google's Android operating system. However, for Android developers the financial rewards are much less than their Apple counterparts. For example, Google paid developers approximately \$600,000 at the end of 2011 which was the equivalent of only 12% of Apple's payment to its developers.

One major issue for Android developers is the large number of devices running the Android operating system. OpenSignals, a network coverage application, recently found 1,363 devices running Android from 599 different brands. Samsung dominated with about 40% of the market [2]. In contrast there are seven models of iPhone, three different iPads and four of the non-phone iPod Touch from Apple. The fragmentation of the Android market makes it very difficult to generate financial return on investment.

Apple computers nowadays are more than simply icons of design, form and function. They are incredibly powerful computers for IT professionals. In the current austere financial climate, Apple computers can also be used by programmers to generate a reasonably high personal income.

References

- [1] Top 500 Supercomputer Sites. [Online]. Available: <http://www.top500.org/system/7286>. [Accessed Dec. 30, 2009].
- [2] C.Arthur and S.Dredge, (June 10, 2012). APPS BLOG, iOS vs Android: why Schmidt was wrong and developers still start on Apple. [Online]. Available: <http://www.guardian.co.uk/technology/appsblog/2012/jun/10/apple-developer-wwdc-schmidt-android> [Accessed June 18, 2012].

Based on the information provided in the above article, answer the following questions.

(1) Judge TRUE(○) or FALSE(×) for each statement below, according to the text. (25 points)

- (a) Programming for the Apple system is more lucrative than for the Android system.
- (b) Two significant events enabled Google to develop Android devices.
- (c) Of the top three supercomputers in 2003, that of Virginia Polytechnic Institute and State University was the most expensive.
- (d) In less than three years, there was more than a five fold increase in the number of Apple Apps.
- (e) Apple devices suffer from a process called fragmentation.

(2) Which ONE of the following statements is FALSE? (10 points)

- (a) The Virginia Polytechnic Institute and State University supercomputer was set up by university staff and students.
- (b) The success of the Virginia Polytechnic Institute and State University supercomputer guaranteed increased research funding.
- (c) Virginia Polytechnic Institute and State University used over a thousand Apple computers to achieve a server speed of 36 teraflops.
- (d) The Virginia Polytechnic Institute and State University supercomputer was used by the Genome project.

(3) On average, how much is generated for each of the top two hundred Apple Apps per day? Choose the answer from the following options. (10 points)

- (a) \$2,700
- (b) \$27,000
- (c) \$270,000
- (d) \$648,000

(4) Which statement best summarizes the article? (10 points)

- (a) Apple has become an insignificant company in the computer and smartphone market. The rapid increase in portable devices has enabled Android developers to gain a rapid return on investment. Apple computers are simply icons of design and should not be used by IT professionals.
- (b) Apple has extended its appeal beyond design and ease of use. Apple computers have been utilized in science research and supercomputer clustering, as well as smartphone application development. Developers of Apple Apps have an increased possibility of financial return on investment. Apple has therefore become a credible option for programmers to consider.
- (c) Two significant events enabled the iPhone, iPad and Android smartphones to gain acceptance. The first was the investment in supercomputers at Virginia Polytechnic Institute and State University in USA, and the second was the announcement of Apple's iTunes Store. These events enabled developers to increase the number of Apps and therefore gain an increased financial return on investment. The Apple versus Android dichotomy is now simply a case of form over function.
- (d) Apple's iTunes Store and Android market place can thank Virginia Polytechnic Institute and State University, USA for generating \$4 billion of sales of smartphone Apps. With a speed of 36 teraflops, the Virginia Polytechnic Institute and State University supercomputer has enabled programmers to develop over five hundred thousand Apps and served over five billion downloads. One professor and a number of his graduate students are now positioned third in research rankings thanks to Apple computers and Android devices.

Part 2 Academic Skills**(45 points)**

Imagine that a university in Japan proposed that all its students must buy a tablet computer such as an Apple iPad or Android Tablet. Write an essay of approximately 200 words in English expressing your opinion about this proposal.