In the 21st century, when high-tech industries are developed, various computers are used in various places. People want a computer that can perform the tasks they need more efficiently and accurately. Among the numerous IT devices developed by many developers based on efficiency, the name of the IT device I will introduce first is raspberry pi. First to approach Raspberry Pi's history, Raspberry pi was created in 2006 in a group of computer lovers. The initial raspberry pi had only one USB and HDMI connection port, but the new version of raspberry pi now has several connection ports. By the time Raspberry Pi was sold, it was not only very popular from Asian countries such as China and Taiwan, but it also disassembled and tested Raspberry Pi of past models for educational use in several British academies. Raspberry Pi has a distinct advantage in price and convenience compared to a typical desktop. Raspberry pi is about the size of a credit card, but it doesn't make a big difference in performance compared to a typical desktop. For example, searching the Internet, playing high-definition media, playing games, etc. To illustrate the difference between desktop and raspberry pi more analytically, raspberry pi uses the RISC processor architecture and the desktop uses the CISC processor architecture. RISC is lower in terms of production cost and energy efficiency than CISC. But raspberry pi first shows superior price advantage. When you buy a typical home desktop, you need to prepare 500 USD, but raspberry pie can be purchased if you prepare 10 to 30 USD. In addition, raspberry pi takes up less space on the desk because it is much smaller than a regular desktop. Raspberry Pi has sold more than 12.5 million SBCs over the past five years, and the raspberry Pi is known to be available without having to have computer expertise. Therefore, the sales volume of raspberry bi will increase. Raspberry pi is also free from language compatibility. Basically, Python can be used as the default programming language, and additional languages such as C, C++, java, perl, ruby, etc. can be used. In 2020, the raspberry pi company is selling even more upgraded products with the release of the raspberry pi OS.

Second, I will explain about the invention kit, Makey Makey, for everyone who can easily participate and enjoy it regardless of children and adults. Makey Makey is a kind of toy that you can easily find in everyday life and you can connect to a computer program using a USB cable or clip and enjoy it. You can even make electronic inventions with this toy and play the piano if you have the tools to connect USB. Makey Makey was first invented in 2010 by students attending M.I.T. Technical College. After its first invention, many designers and developers participated to create the current Makey Makey was born. It is important that the Makey Makey connects with things that can move. Moreover, Makey Makey is particularly good for young children who first get to know computers because she satisfies their interests in coding and computing through a medium such as games. In fact, some kindergartens use the Makey Makey to help them understand electronics and computers by forming groups of children for the education of children over the age of six. The Makey Makey works with a sense of resistance that requires the circuit to be closed in order to facilitate the instrument. The price is sold at approximately 25USD and can be purchased easily over the Internet.

The development of these tools can have a great effect on the world of it. First of all, raspberry pi lacks performance compared to conventional computers and laptops, and although there are many parts needed to use it, it has great general purpose. Even if the user is ignorant of programming, driver computer files, etc., the installation of only the relevant programs and projects that are widely available on the market can be used as necessary for the user. Makey Makey is also very easy to manipulate and has great artistic value, which can arouse interest enough. These advantages can lower the hurdles for entry into I.T for beginners who are inexperienced in programming or those who are not involved in the I.T industry. These advantages are likely to change the programming education system. First of all, it is easy to secure in large quantities because of its low price, easy to operate, and interesting, so it is easier to educate children and beginners about computer and I.T. In fact, Alex Hope, co-author of the next generation report, said they are promising computers that can teach children the joy of programming. In addition, these tools can affect engineering and invention. In fact, in the case of Makey Makey, it was established as a permanent collection of modern art museums in 2014, and in the same year, it was selected as one of the top 10 toys at the toy fair. Because of this artistic value, I think it can be used as an item for artists, engineers, and inventors to implement various ideas. I don't think these tools can completely replace the tools of current I.T yet, but I think they will reinforce the technology now enough. The 2011 technology author, Glanmudi, calls the Raspberry Pi Project a potential BBC Micro 2, and cannot replace but can make up for it. The Computer History Center has strongly pushed for raspberry pis, calling them 'the gatekeeper of the new era.' If these tools are developed and commercialized in the future, they will be able to be used in everyday life as familiar as various electronic devices such as computers. In terms of education, these kits can be used for IT-related education, and in addition, e-kits such as games and listening to music can be used for hobbies. I am interested in programming, so I am majoring in IT. However, the difficulty of programming is high, so I think the entry barrier of programming is high. But if I use these kits, not only I but also others will be able to learn programming more easily and interestingly. For example, I can easily understand the basics of coding with simple modules using Makey Makey Kit, and I think that even students who are learning I.T. can make basic inventions or development by taking advantage of the simple difficulty and low price of Raspberry Kit. I like games. However, the price of game consoles on the market is very expensive. But if I use these kits, I can solve these problems by researching and making them myself. If you download Raspberry Pi kits and some emulator files, you can make your own cheap and fun game console. These effects can be of sufficient interest to family and friends, not just to those who are engaged in IT or who are studying in IT-related departments like me, but also to those who are completely unrelated. Parents can make simple instruments or game consoles using the Maykey Makey kit and present them to their children, while unrelated people in IT will be able to easily access them without any burden using the Raspberry pi or Mayket Makey kit. Also, those who want to study IT but do not learn it due to lack of conditions will be able to use these cheap kits to enter without being pressured by cost.

The impact of I.T. industrial development does not end in desktop. In particular, the A.I. industry, one of the recent developments in the I.T industry, is a stage that is rapidly developing. A.I. stands for Artificial Intelligence, literally allowing computers to perform on behalf of human intelligence activities. Among them, artificial intelligence about driving a car is what people want more intensely. Many people easily feel tired and bored of driving for a long time. First, the meaning of autonomous driving means a car that can be operated without human intervention, and a system that detects obstacles around it due to sensors embedded in the car, and at the same time, routes the car's navigation system to reach the destination. Even cameras attached to cars can detect traffic lights and road signs. However, self-driving cars have not been commercialized yet and remain in the research and testing stages. Indeed, many car drivers do not yet trust autonomous vehicles at present. People can't predict when and how accidents will happen at all. Even companies are in trouble. If a self-driving car is involved in an accident while driving, it is not easy to sell self-driving cars to the auto market because the responsibility lies with the company that made 100 percent of self-driving cars. According to an article, 75 percent of respondents in a 2016 survey by the American Automobile Association said they were not ready to accept autonomous vehicles. Nevertheless, many companies are studying self-driving cars because there are many advantages to developing self-driving cars. For example, traffic congestion will decrease by 30 percent because all cars with A.I. can collect information on which roads are congested and which roads are not congested in real time. Furthermore, using self-driving cars can reduce CO2 emissions by 80 percent worldwide, according to an article. Putting autonomous driving mode on cars will not stop at regular cars sold to consumers, but will also be introduced to public transportation such as taxis and buses. In fact, a U.S. company called Robotaxis conducted a small test on citizens using iPhones in one area. The small test is for people to call self-driving taxis on iOS apps, which have driven more than 100,000 cars in a year. Public transportation with this type of autonomous driving. There is a great economic advantage for consumers. According to an article's survey, the cost of a 10- to 20-kilometer trip will be reduced by 40-60 percent for taxi trips and 6 to 11 percent for bus trips. Finally, active self-driving public transportation can bring about effects such as increased labor productivity and reduced subsidies and will bring huge benefits to the transportation industry and the government as well as consumers. Because of these benefits, many automakers are preoccupied with auto-driving research. Hyundai, Korea's leading automaker.KIA, along with Aptiv Plc Company, has decided to invest $4 billion to develop unmanned vehicles. Hyundai. The KIA company said it plans to commercialize self-driving cars from 2021 and aims for fully unmanned vehicles by 2030. Not only Hyundai.KIA but also automotive companies such as TOYOTA, Tesla Inc. and the giant are now engaged in developing autonomous driving modes. However, as all companies dreaming of selling autonomous vehicles are concerned about "stability," and numerous repeated experiments and studies are needed to complement that "safety," it seems that autonomous vehicles will require stability without a single error.

Automatic driving systems can have many positive effects on society. First of all, the automatic driving system has the advantages of convenience, safety, time-saving, and eco-friendly. It is very convenient for the driver because it automatically drives and parks first, and for the same reason, it can prevent safety accidents caused by human error. Auto-driving cars also drive through a systematic system, eliminating traffic congestion and greatly reducing the time it takes to drive. At a time when global warming is calling for eco-friendliness, automatic vehicles are even more environmentally friendly by detecting the existence of other cars in a systematic system, reducing the gap between cars than conventional drivers, and thus reducing air resistance to reduce fuel consumption. Because of these advantages, perhaps if automatic driving systems are commercialized, there will be a change in transportation first. If self-driving buses and taxis are introduced, it is expected that the government will not only create the advantage of reducing human rights costs and the aforementioned fuel consumption but also improve public access to public transportation by reducing travel costs. Of course, the automatic driving system does not only have a positive effect. The impact of these changes will probably have a significant impact on the automotive industry and on most drivers. According to a report released by the New America Foundation, a U.S. policy research institute, the automatic driving system could cause massive unemployment in drivers as well as job losses for auto-related companies. Also, new types of crimes can be committed by hackers by hacking autonomous vehicles, and if more than 80 percent of cars that are commercialized and driven on the road are unmanned vehicles, who should be held responsible in the event of accidents among unmanned vehicles? is still not legally defined. In order to commercialize the automatic driving system, I think we need to come up with solutions to the new problems that the automatic driving system will cause in the future.

By the time the autonomous driving system is commercialized, there will be many changes in daily life. First of all, automatic driving cars will be very different from what we think they are. It is expected that the composition of indoor spaces will change a lot as it can secure a lot of space because it does not require a driver's seat. We can now sleep very comfortably in the car while driving, work, and eat and play games. This means that cars can now be a living space. If I have a self-driving car, I will have breakfast on my way to school, and study assignments or departments. I like taxis. In Korea, however, there is a bad habit of refusing to ride at certain times depending on the driver. This problem is likely to be solved if autonomous taxis are commercialized. Moreover, the basic fare for taxis in Korea is almost 4000KRW, which is quite expensive compared to my economic ability. Even some bad vicious drivers deliberately make the distance to arrive in 10 minutes over 15 minutes to make the fare increase further. However, if self-driving taxis become more common, not only will taxi fares be reduced and taxi fares can be used without any burden, but also the navigation program installed on cars can save time by using roads with smooth traffic and reduce the amount of exhaust gas that cars generate while waiting for signals. Finally, if self-driving taxis and buses become common, taxi drivers and bus drivers are no longer needed. Unfortunately, it is regrettable that taxi drivers and bus drivers lose their jobs, but companies will hire more programmers to develop better self-driving programs. The number of jobs for programmers studying autonomous driving is expected to increase and it will be good news for students studying I.T.

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