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It is quite clear that a quantum computer is more superior than a classical computer. There are certain tasks that a classical computer cannot execute without the need of absolute force. Factoring being one of them. A classical computer can only factorize small numbers, but it still requires a huge amount of force to execute this calculation. Thanks to Shor’s factoring algorithm for quantum computers larger numbers can now be factorized and do not require force in order to be executed. No one really knows what aspect of computing allows Shor’s algorithm to work faster than any possible algorithm for factoring. One aspect considered is entanglement, which was explained earlier. Classical computers are local and therefore require some time to resolve contingencies, this in turn wastes a lot of time to execute the task at hand. This is not the case with quantum mechanics and so quantum computers have no need to resolve these problems and waste no time in doing so. Therefore, algorithms are executed twice as fast and larger numbers in large quantities can be factorized. Inside a classical computer, atoms move around slowly and so tasks are performed at a slow rate. That is not the case with a quantum computer (Jaeger, 2018). Atoms move and change much quicker inside a quantum computer allowing each task that a classical computer executes to be performed faster. Atoms don’t follow the rules of physics as they can move forwards or backwards in time. They can be in two places at the same time and even have a chance of teleportation. This provides a huge advantage for quantum physics and future computing. Qubits are used in a quantum computer which causes exponential speedup and a larger number of calculations to be performed with ease. The outcomes of measurement of a qubit contains a value of either 0,1 or any value in-between (P.Williams, 2011). A bit can only have one of the two outcomes, 0 or 1, but a qubit can have both and hence store twice as much information. This in turn allows a quantum computer to handle greater amounts of calculations and solve parallel problems at the same time.

There are so many advantages with quantum computing and it is nearly impossible to think of the obstacles that could potentially prevent this masterpiece from becoming a reality. There would be a lot of things that would have to change for us to have the ability to use a quantum computer. Quantum decoherence is the biggest obstacle scientists and physicists have come upon (Fujikawa & Ono, 2000). Working with an electron isn’t easy. When the electron is affected by the atmosphere it gets damaged and is no longer useable. This would mean we would have to isolate the system from its environment. The equipment required to preserve the electron is not yet available and we also require superconducting cables, which are only produced by one company in Japan. Decoherence is irreversible and is something that should be highly controlled or completely avoided. When you put it into perspective about how much equipment is needed you start to notice the cost for all this equipment. Technology doesn’t come cheap and is often irreplaceable. There are so few companies that produce the products required to run a quantum computer and along with that comes a price since there are so few. Even tech producers need to make a profit. It would simply just cost too much to produce a quantum computer and the resources are already scarce as it is. Businesses would make a huge profit with one of these computers by their side but is it worth breaking the banks for one. Above the cost and the equipment, what about the people who will have possession over this machine? With a quantum computer a person would become untraceable due to the cryptography elements inside this computer. As it is a classical computer doesn’t have the necessary security to help keep private information safe or prevent networks from being hacked. In the wrong hands this machine could become the deadliest weapon known to man. The person would be in and out of a network system without anyone even knowing until it’s too late. Mass destruction could be caused and countries turning against each other.

Quantum computing will be part of our future and will forever be changing the way in which we live. As well as providing ways to improve the development of drugs and helping to preserve our agriculture, it will provide a strong income for our economy. It may take time for this process to begin but once it does there will be changes unlike no other. Financial, pharmaceutical and security industries will be the first ones to witness most of these changes in a short space of time. Once these sectors begin to change so will everything else. Products will be produced faster, and customers will have access to these goods as soon as possible. Hence forth more money will be spent on goods and businesses will begin to make a larger profit than before. This in turn will boost the economy and we will begin to see a decrease in the number of local and global businesses closing. Every government will have the funds, through taxes, to build essential facilities like schools, hospitals and economical factories along with essential services like paramedics, firefighters and the gardai. More and more children will have the chance to go to school and hospitals will no longer be over-crowded. We will be able to save more lives on the roads with an ambulance station set up in every town and village. Quantum computing is the way to go and will be one of the greatest discoveries ever made. It will change our perspective on life and change the way in which we live our lives. The only way is up.

# Works Cited

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