



# BASIC STUDY OF QUANTUM COMPUTER VS CLASSICAL COMPUTERS

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## ABSTRACT

*In this paper i cognizance on the primary distinction between quantum computers and classical computers. People who are not from the field of computer science couldn't recognize that what is quantum computing and what its uses are? It defines the basic differences, design problems of quantum computers. It also discusses the advantage and disadvantage of quantum computer over classical computer.*

**KEY WORDS** :Quantum computer, classical computer, quantum mechanics.

## INTRODUCTION

Classical computers are develop in early 19<sup>th</sup> century. Our first generation computer is based on vacuum tube and second generation is base on semiconductor transistor. From third generation the computer system is based on IC chip . As size of electronics component is decreases the size of the computer system is also decrease. Computer based on today's chip technology is not get cheaper and better.

The technology of quantum computers is very different from the classical computer. Quantum computer is based on physics quantum theory. Quantum computation transform the memory into quantum superposition. In early 1980s Quantum computing was proposed by physicist name paul Benioff. Quantum computing simulations are out of reach for classical computers.

Classical computer's units are referred as bits. Bits are represented by manner of 0 and 1. In quantum computer memory also use bits represents 0, 1 and some mixture of 0 and 1 (superposition state). Quantum computing bits are called qubits.. The power of forty qubits have equivalent to modern super computers i.e its can search a phone number in 25 to 30 secs from worlds phone book.

## ADVANTAGES AND DISADVANTAGE OF QUANTUM COMPUTERS

### ADVANTAGE

- Quantum computer is very faster than the classical computer.
- Quantum computer can give better performance than classical computer.

- In quantum computing qbits are the superposition state so, it can do calculation with exponential speed .
- Quantum computer can carry out classical algorithm very successfully.

## DISADVANTAGES

- In quantum computing the required technology which help to protect the electron is not available .
- Research work is in progress.

## ADVANTAGES AND DISADVANTAGE OF CLASSICAL COMPUTERS

### ADVANTAGE

- Classical computer can do complex calculations and does it fast but slower than quantum computer.
- Classical computer helps in storing data, retrieval, and security.
- Classical computers are helping into file sharing over large networks.
- Classical Supercomputers can simulate real-world events and display time-based progressions.

## DISADVANTAGE

- Using classical computer can make you physically susceptible and lazy.
- oing extra unwanted activities on classical computers can waste your time.



- By using classical computers for a long time, your blood circulation can become poor due to less physical activities.
- Classical computers can cause the disturbance in one's meal.
- Classical computers Can purpose heal th troubles like awful postures, aches, obesity, eye problems, etc.
- Classical computers also, it has a bad effect on training if it's far used improperly.

## CONCLUSION

Quantum computer revolutionize the computational world. Large companies and some starts up are working upon non error corrected quantum computer. It is critical that making a sensible quantum computing continues to be far in the future. Quantum computing programming method is different from classical computer. Quantum computer development is very costly. Even the best scientists can't clarify the questions of quantum computers logic. Quantum computer is based on quantum physics. Quantum computer systems easily resolve applications that can't be done with assist of today's computers. Although the future of quantum computing looks promising, so, we have to realize on quantum computer..

## QUANTUM COMPUTING AND FUTURE

Quantum figuring continues on being in its earliest stages, besides a few gadgets as of now exist that would bolster numerous bits. An essential quantity of studies attempt is currently committed to improving these capacities, and sooner rather than later quantum computer systems will take a leap forward. Recently IBM introduced its 50 qubit quantum computer , an brilliant feat of engineering and science. When quantum computers reach the order of hundred qubits, humanity will be geared up with exceptional computing power. Many cyber security techniques are primarily based on the incapacity of classical computer systems to carry out positive obligations in feasible times, making looking to surpass them impractical. These classically unsurmountable duties include those which may be made vastly more efficient by the usage of quantum computers. Cryptography is definitely below chance from quantum computers, and with it cutting-edge day gear like Internet banking, credit score card transactions, e-mail, chat offerings and greater. New encryption strategies and solutions are needed to make certain the continuing survival of the Internet infrastructure which makes our lives easier. Like a snake poison's antidote is regularly created using the deadly substance itself,

the answer to quantum hacking lies in the origin of the problem, quantum mechanics.

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