# The usage of propositional logic in computer science and programming

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Modern day computers are used on every step of our life. From banking and production to objects of everyday use like phones or laptops, each device is based on main principles of computing. These principles were derived and described by mathematicians and philosophers of the past, when even mechanical calculating devices did not exist. Other principles were devised during the first-generation computer era separately by von Neumann in the USA and Lebedev in the USSR. But they are describing the way modern-day computers are built and communicate with memory and peripherals.

The main process that occurs during any operation in computer is a sequence of logical operation which is done by composition of logic gates. These gates define a Boolean function, like AND(), OR() and other. Using such gates, we can describe any operations such as addition and multiplication.

But the foundation is not the only place where propositional logic is used. Any programming language contains an *if* operator that is used to manipulate the workflow of an application. It is one of the most important part of any program because based on this operator we can create conditional statements and loops.

Other important use of propositional logic in modern days is used in databases. Any database has a language to write queries to this database(SQL, GraphQL, Logica etc.). These queries can insert data into database and retrieve it for our program. All such queries are based on propositional logic. Example of such query, written in SQL:

**SELECT \* FROM Person WHERE Age >= 18;**

Other ways to use propositional logic are more specific. For example, during the searching process using search engines like google the propositions can be used to describe what should or should not be present in the result. In AI propositional logic is used to define a thought process of a machine.

In conclusion, logic and propositional logic are one of the most important parts of computer science. But sometimes it is not enough. Hence we have other types of logic, like predicate logic which can be used, for example, in Natural Language Processing.