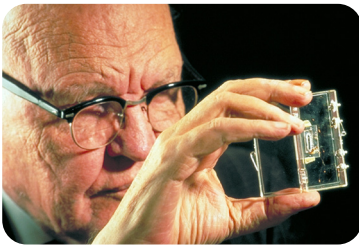


# Jack Kilby and Robert Noyce

The invention of the integrated circuit was a milestone in the history of electronics. In the late 1950s, Jack Kilby and Robert Noyce, working independently, had intuitions that led to the creation of the first integrated circuits, and this was the first step that led to all of the further developments in electronic circuitry.



## Jack Kilby

Born in 1923, Jack Kilby graduated in electrical engineering from the University

of Illinois in 1947. In 1958, he was a newly employed engineer at Texas Instruments and, as he did not yet have the right to a summer holiday, he spent the summer working on a big problem in circuit design: engineers could not increase the performance of circuits **due to** the high number of components that needed to be wired to every other component. Kilby concluded that a solution could be to produce all of the circuit components in a single piece of semiconductor material. In September he presented his company's **management** with an integrated circuit made from a single piece of **germanium**, a semiconductor which, when attached to an oscilloscope, showed a continuous **sine wave**, thereby proving that his integrated circuit worked.

In 2000 he **was awarded** the Nobel Prize in Physics.

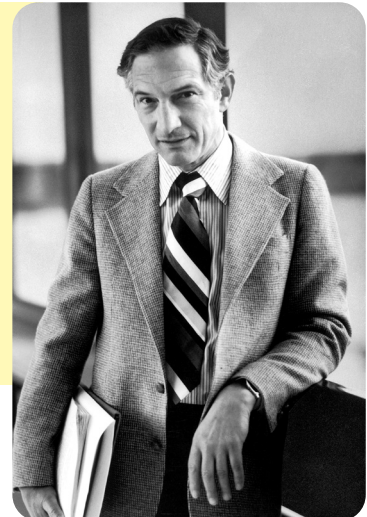
## Robert Noyce

**Nicknamed** "the Mayor of Silicon Valley"•, Robert Noyce was born in 1927 and graduated in physics from MIT•• in 1953. After working with William Shockley• in his company, Noyce was among the founders of the Fairchild Semiconductor company in 1957 and then, in 1968, he created Intel together with Gordon Moore••. In 1959, Noyce invented a type of integrated circuit in which all components were inserted into a silicon chip and connected with copper lines. His invention was **patented** only a few months after Kilby's. Noyce was honoured by three American Presidents for his co-invention of the integrated circuit and its great impact on the development of technology.

Noyce continued to supervise technological development in his company, such as the revolutionary invention of the microprocessor by Ted Hoff in the early 1970s.

Adapted from: [https://en.wikipedia.org/wiki/Jack\\_Kilby](https://en.wikipedia.org/wiki/Jack_Kilby); [https://en.wikipedia.org/wiki/Robert\\_Noyce](https://en.wikipedia.org/wiki/Robert_Noyce)

**to be awarded:**  
*essere insignito di*  
**due to:** *a causa di*  
**germanium:**  
*germanio*  
**management:**  
*direzione*  
**nicknamed:**  
*soprannominato*  
**to patent:**  
*brevettare*  
**sine wave:** *onda sinusoidale*



What is "Silicon Valley"?

William Shockley is one of the inventors of the transistor, together with John Bardeen and Walter Brattain.

What is MIT? If necessary, search the Internet for information.

Read about Gordon Moore and his law using the Online Resources, Section 3 Unit 2.

**1**  Read the text and decide if the statements refer to Kilby (K) or Noyce (N).

	K	N
1. He graduated in physics at MIT.	<input type="checkbox"/>	<input type="checkbox"/>
2. He was the co-founder of a famous electronics company.	<input type="checkbox"/>	<input type="checkbox"/>
3. He was an electrical engineer.	<input type="checkbox"/>	<input type="checkbox"/>
4. His integrated circuit was made of silicon.	<input type="checkbox"/>	<input type="checkbox"/>
5. He was the first to patent an integrated circuit.	<input type="checkbox"/>	<input type="checkbox"/>
6. He received the Nobel Prize.	<input type="checkbox"/>	<input type="checkbox"/>
7. He solved a big problem that affected engineers.	<input type="checkbox"/>	<input type="checkbox"/>
8. He received appreciation from several American Presidents.	<input type="checkbox"/>	<input type="checkbox"/>

**2**   Complete the tables with the correct events then use the information to write a short text about Jack Kilby and Robert Noyce.

**Jack Kilby**

1923: birth.....  
 1947: .....  
 Summer 1958: .....  
 September 1958: .....  
 2000: .....

*Jack Kilby was born in 1923...*

.....  
 .....  
 .....

**Robert Noyce**

1927: .....  
 1953: .....  
 1959: .....  
 1968: .....  
 1970: .....

*Robert Noyce...*

.....  
 .....  
 .....