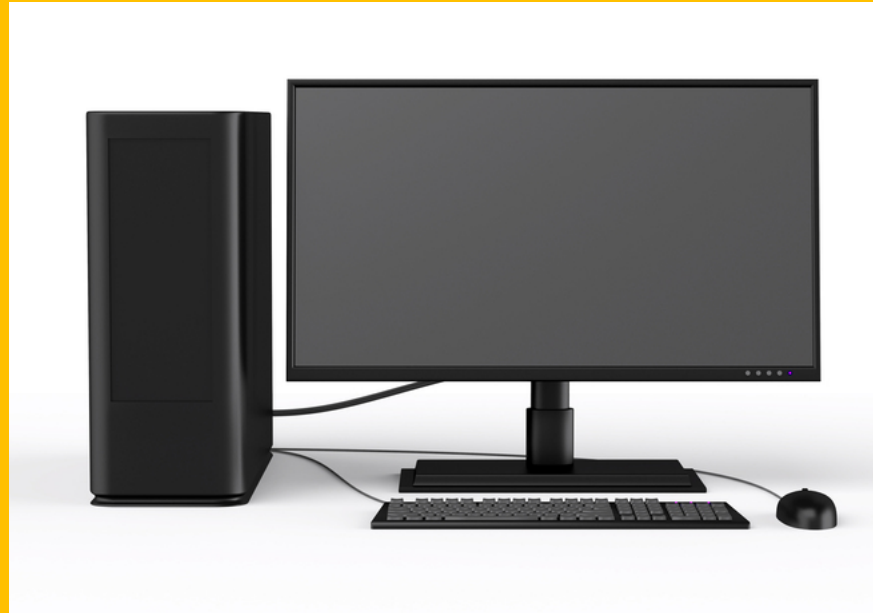


# History of Computing



# Hardware v Software

## *Hardware*

This is the physical parts of the computer which you can touch, for example monitors, keyboard, printers, wiring etc.



## *Software*

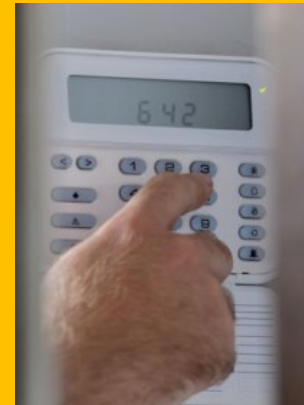
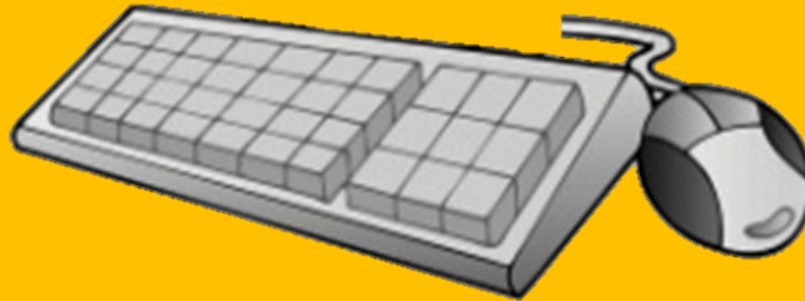
This is the set of instructions for the computer to run a particular task or boot up, for example a word processor will be used to create documents and a virus checker can be used to check and clear viruses on the system.



# Hardware

- Hardware can be grouped into three main areas:
  - ***Input Devices***: these are used to control the computer and are used to put data into the system.
  - ***Output Devices***: these get something out of the computer for instance data or sound.
  - ***Storage Devices***: these are used to save data onto and can be inside the computer or portable so the data can be taken with the user.

# Input Devices



# Output Devices



# Storage Devices



# What is it?

Is this an input, output or storage device?



Scanner

Input Device

# What is it?

Is this an input, output or storage device?



**USB Drive**

**Storage Device**



# What is it?

Is this an input, output or storage device?



Speakers

Output Device

# What is it?

Is this an input, output or storage device?



Game Controller

Input Device

# What is it?

Is this an input, output or storage device?



**Bar Code Reader**

**Input Device**

# What is it?

Is this an input, output or storage device?

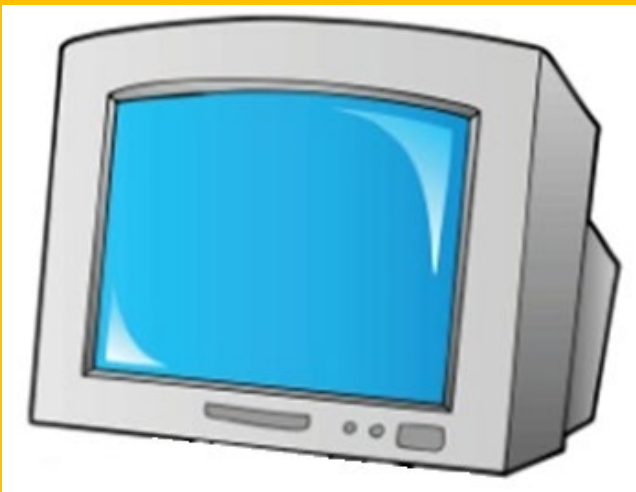


Printer

Output Device

# What is it?

Is this an input, output or storage device?

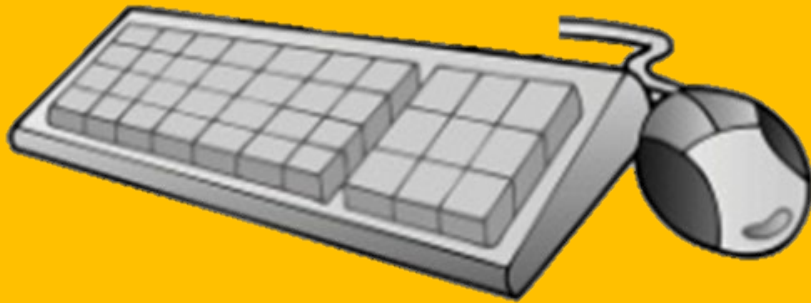


**Monitor**

**Output Device**

# What are they?

Are they input, output or storage devices?



**Keyboard  
and Mouse  
Input Devices**

# What is it?

Is this an input, output or storage device?



**Hard Drive**

**Storage Device**

# What is it?

Is this an input, output or storage device?



**Motion Sensor**

**Input Device**



# What is it?

Is this an input, output or storage device?



**Headphones**

**Output Device**

# What is it?

Is this an input, output or storage device?



**Microphone**

**Input Device**

# Moving On...

list as many software packages as  
you can.



# Software

- Last lesson you looked at the different types of hardware used in modern computers. This lesson we will concentrate on the software that is used.
- Software is the name given to the programs which control the computer.
- They can be grouped into three main groups:
  - **Operation Software:** used to control the workings of a computer.
  - **Applications:** installed onto the computer to perform a specific task such as creating documents or spreadsheets.
  - **Utilities Software:** These carry out specific tasks which help the computer system run efficiently such as virus checking and Winzip.

# Operating System

- An operating system enables the hardware of a computer system to run and allows the various parts of the computer to exchange data and run their tasks.
- Over 90% of the world's computers use the Microsoft operating software called Windows®.
- Other operating systems include:
  - Unix
  - Android
  - Mac OS X

# Application software

- This covers the software which is usually installed onto the computer separate from the operating system and allows the user to perform specific tasks. Some common ones include:



***Word Processors:*** These allow the user to create documents such as letters and reports.



***Desk Top Publishers:*** These allow the user to create more graphical document such as Posters and Newsletters.



***Spreadsheets:*** These allow the user to perform calculations and deal with numeric data.



***Database:*** These allow the user to handle large lists of data and perform tasks such as sorting and filtering the data easily.

# Other types of Application Software

- Along with the main types of application there are other more specific applications:

- Presentation software
- Website development
- Animation creation
- Video and sound editing
- Graphics manipulation
- Email and internet software

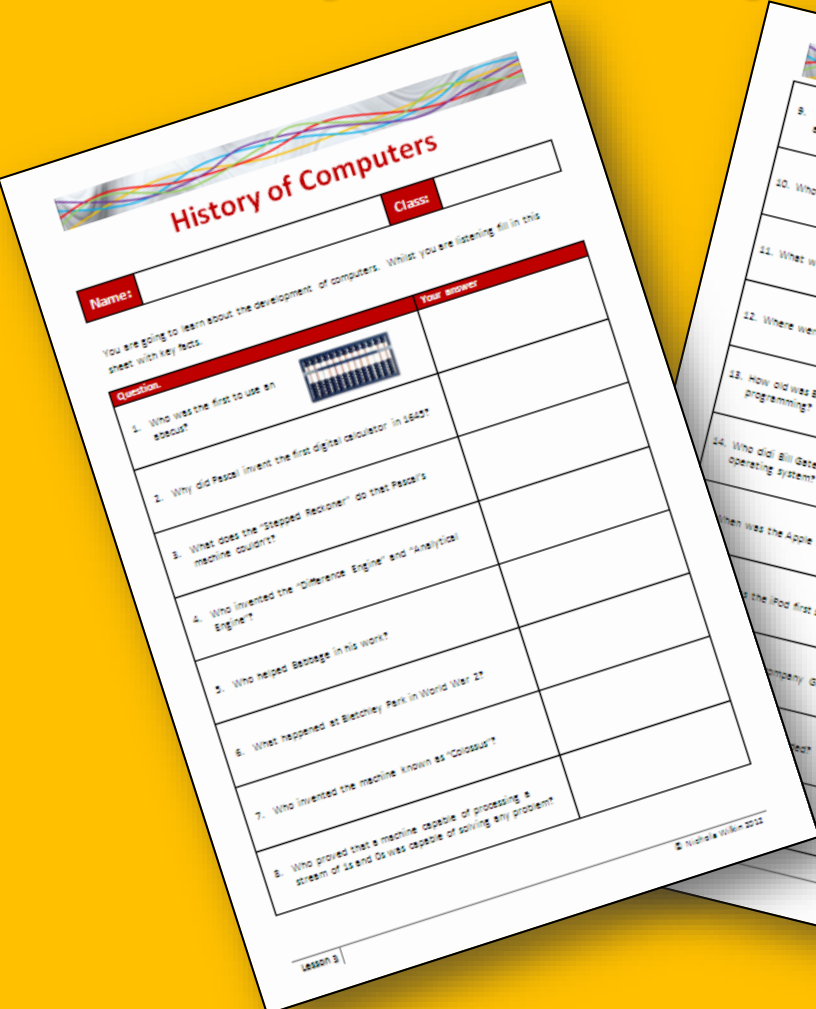


# Utilities software

- Utilities software helps the computer system run smoothly. Common utilities software include:
  - **Anti Virus:** Scans for computer viruses and clears them up when they are discovered.
  - **Backup:** This makes a copy of all information on the disk.
  - **Data Compression:** Squashes the data into a smaller size so it can be transferred easily.
  - **Disk Checkers and Cleaners:** These scan the hard drive and find files that are not used or are unnecessary.



# History of Computers



**History of Computers**

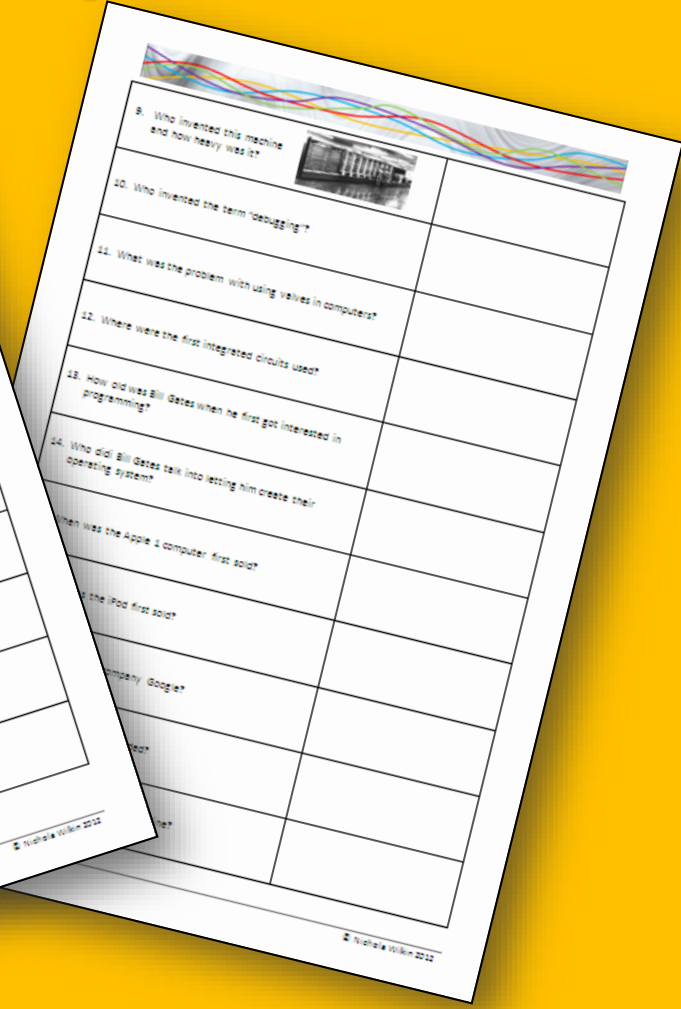
Name: \_\_\_\_\_ Class: \_\_\_\_\_

You are going to learn about the development of computers. What you are learning fill in this sheet with key facts.

Question	Your answer
1. Who was the first to use an abacus?	
2. Why did Pascal invent the first digital calculator in 1642?	
3. What does the "Stepped Reformer" do that Pascal's machine doesn't?	
4. Who invented the "Difference Engine" and "Analytical Engine"?	
5. Who helped Babbage in his work?	
6. What happened at Bletchley Park in World War 2?	
7. Who invented the machine known as "Colossus"?	
8. Who proved that a machine capable of processing a stream of 1s and 0s was capable of solving any problem?	

Lesson 9

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Question	Your answer
9. Who invented this machine and how heavy was it?	
10. Who invented the term "debugging"?	
11. What was the problem with using valves in computers?	
12. Where were the first integrated circuits used?	
13. How old was Bill Gates when he first got interested in programming?	
14. Who did Bill Gates talk into letting him create their operating system?	
15. When was the Apple 1 computer first sold?	
16. When was the iPod first sold?	
17. When was Google?	
18. When was the first computer?	

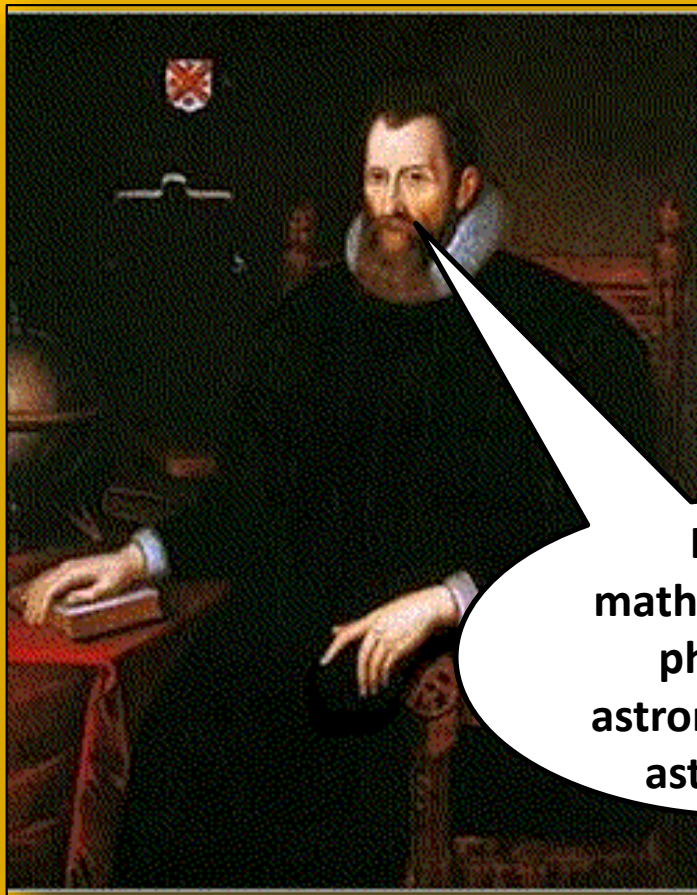
© Nickola Wilson 2012

# Over 5000 years ago...

The abacus was used in Babylon 2000 years before the Greeks used it to help with calculating. To use it, you slide the beads up and down on the rods to add and subtract. It is still used today in some countries.

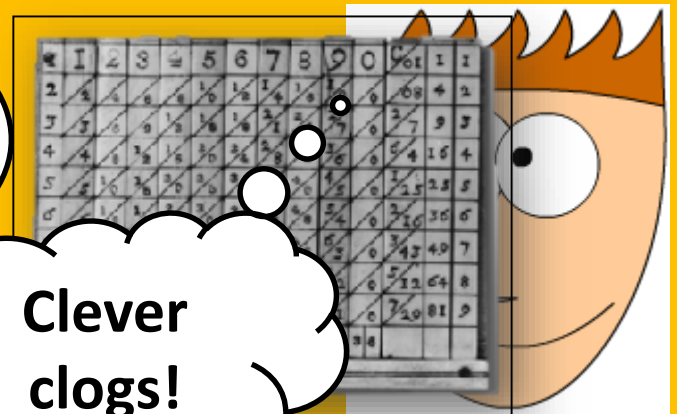


# John Napier



I am a  
mathematician,  
physicist,  
astronomer and  
astrologer.

John Napier invented  
“logarithms” which use  
lookup tables to find the  
solution to otherwise  
tedious and error-prone  
mathematical calculations.



Clever  
clogs!

# Blaise Pascal

This famous French philosopher and mathematician invented the first calculator in 1645 to help with collecting taxes. It could add and subtract by rotating dials.





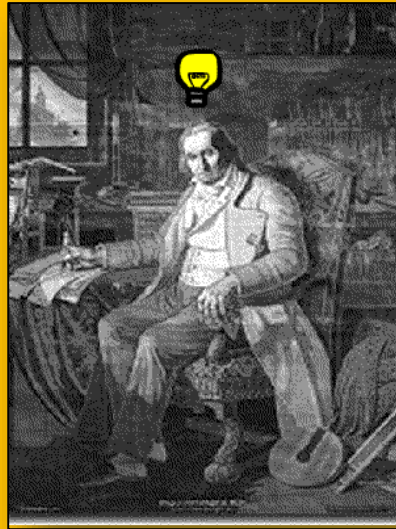
# Gottfried Wilhelm von Leibnitz



Leibnitz invented a machine in 1674, around 30 years after Pascal invented his machine. He called it the “Stepped Reckoner” and it could not only add and subtract, but multiply and divide as well.

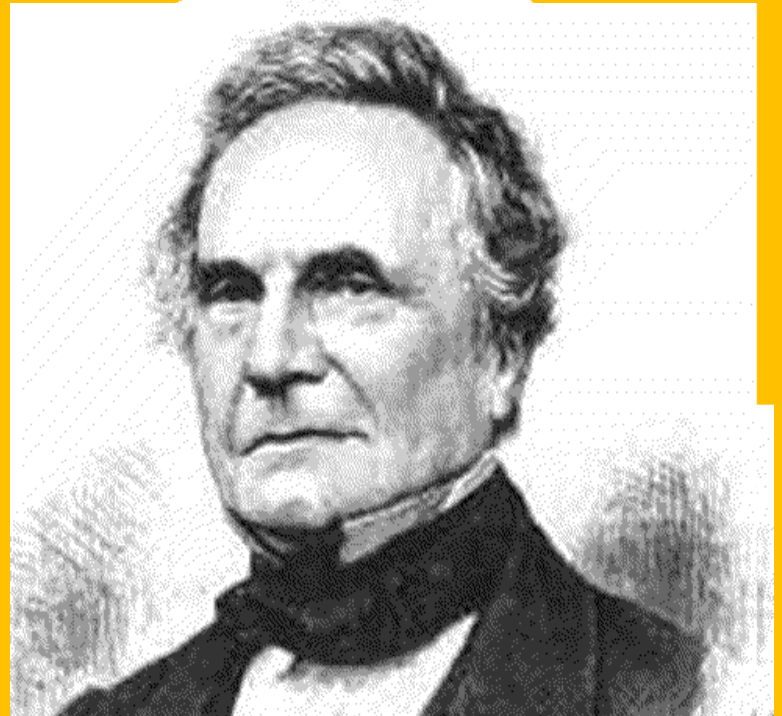
# Joseph-Marie Jacquard

Joseph-Marie Jacquard was a weaver. In 1804, he got the bright idea of adapting the use of punched cards used in musical boxes to control his looms. His invention provided a model for the input and output of data in the electro-mechanical and electronic computing industry.



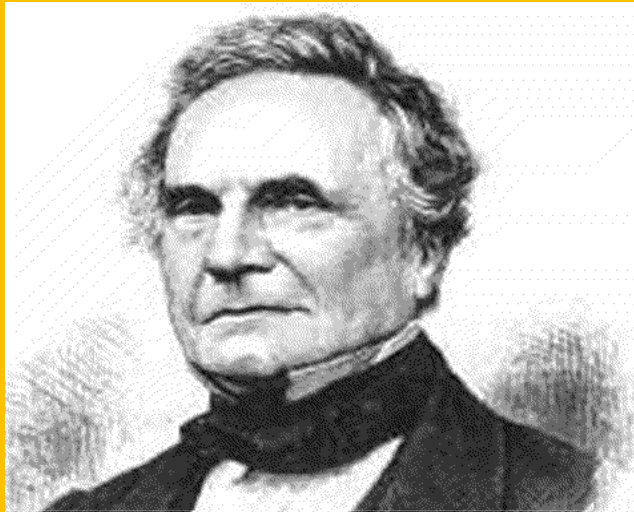
# Charles Babbage

Charles Babbage  
designed the  
“Difference Engine” and  
“Analytical Engine” in  
the early 19<sup>th</sup> Century,  
which was the blueprint  
used in the invention of  
the modern electronic  
digital computer.



# Charles Babbage

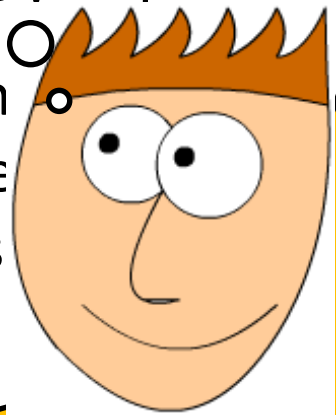
The Difference Engine was never fully built. Babbage drew up the plans for it while still a student at Cambridge University.



I also invented...

**Another clever chap.**

...calculating  
lights for lighthouses,  
Greenwich time  
heliograph  
ophthalmoscope  
HATE street mus





# Lady Augusta Ada



She was the daughter of the famous romantic poet Lord Byron and she was a brilliant mathematician who helped Babbage in his work. She documented his work, which Babbage could never bother to do and also wrote programs to be run on Babbage's machines. She is recognised as the first computer programmer.

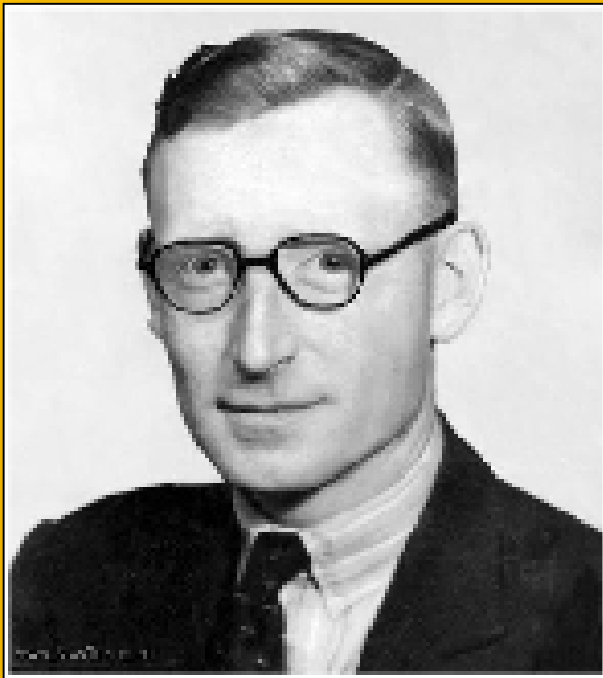
# Bletchley Park

During World War 2, code breakers used computational analytical models to try and work out what enemy messages meant.



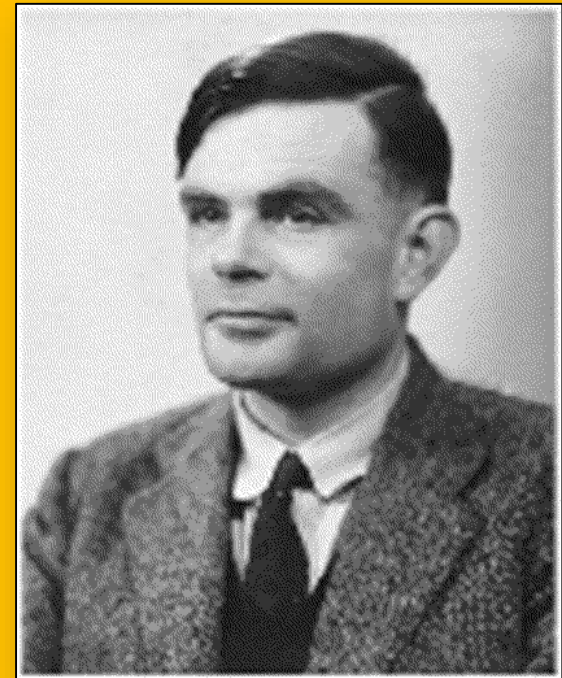
# Bletchley Park

Two young engineers who met there were called...



Tommy Flowers

and

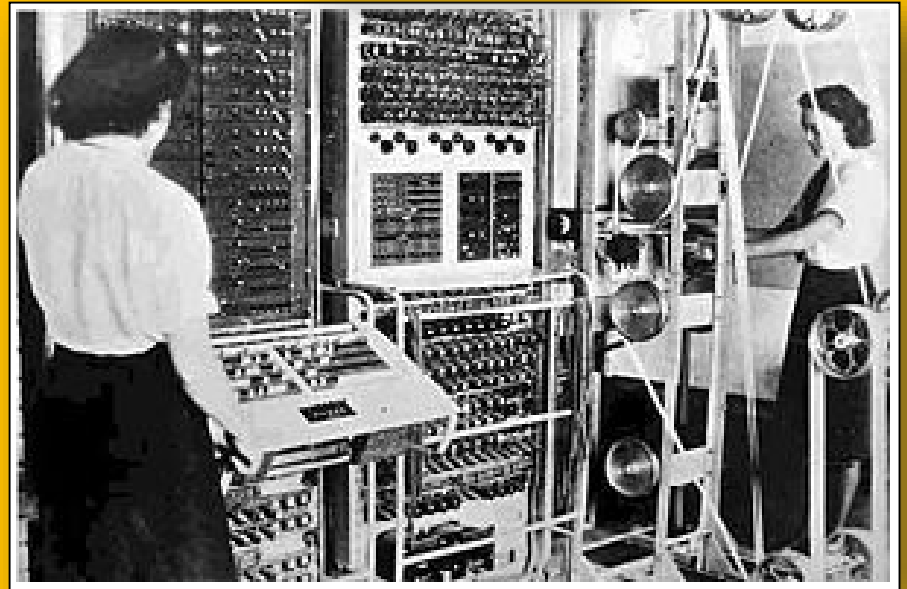


Alan Turing

# Tommy Flowers

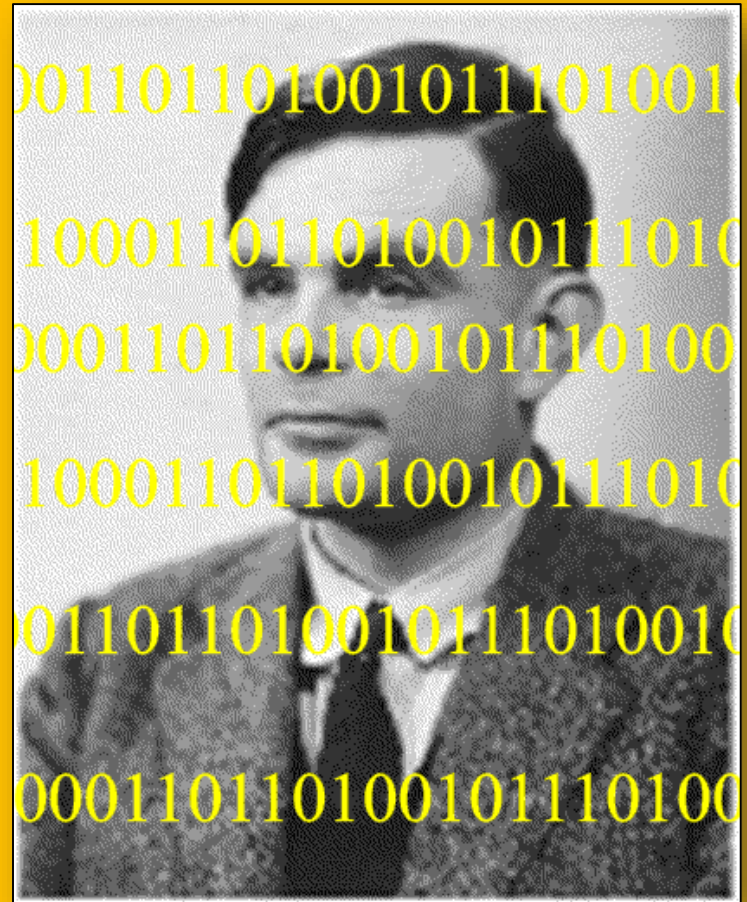
Tommy Flowers  
invented a computer  
called Colossus which  
was the world's first  
electronic, digital,  
programmable  
computer.

It was HUGE.



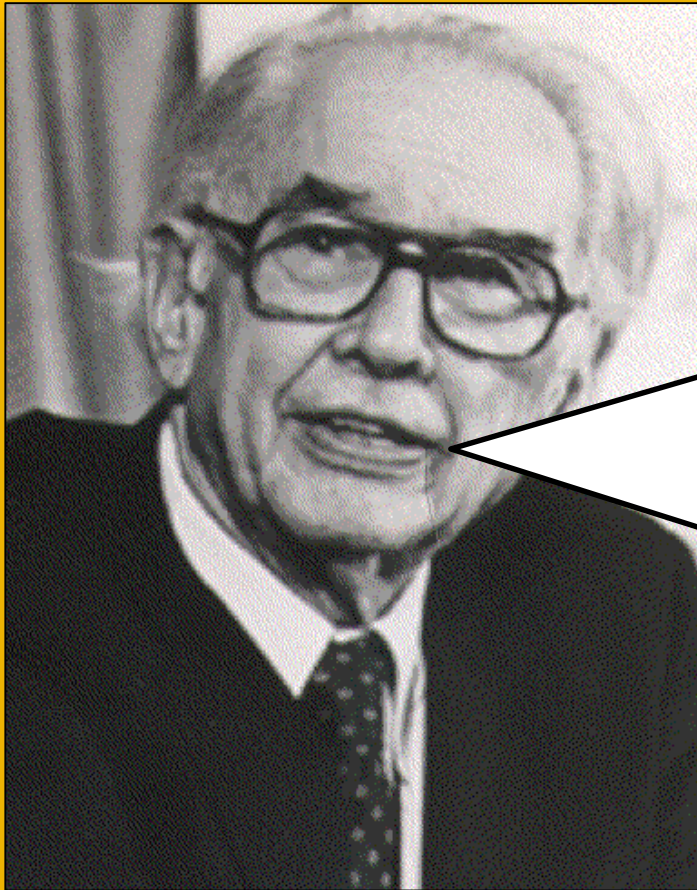
# Alan Turing

Alan Turing published a paper called *On Computable Numbers, with an application to the Entscheidungsproblem*. The paper proved that a machine capable of processing a stream of 1s and 0s according to programmed instructions would be capable of solving any problem.





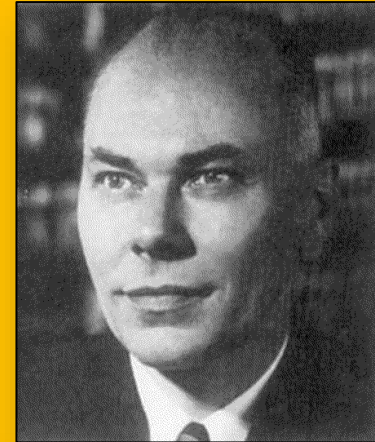
# **John Vincent Atanasoff**



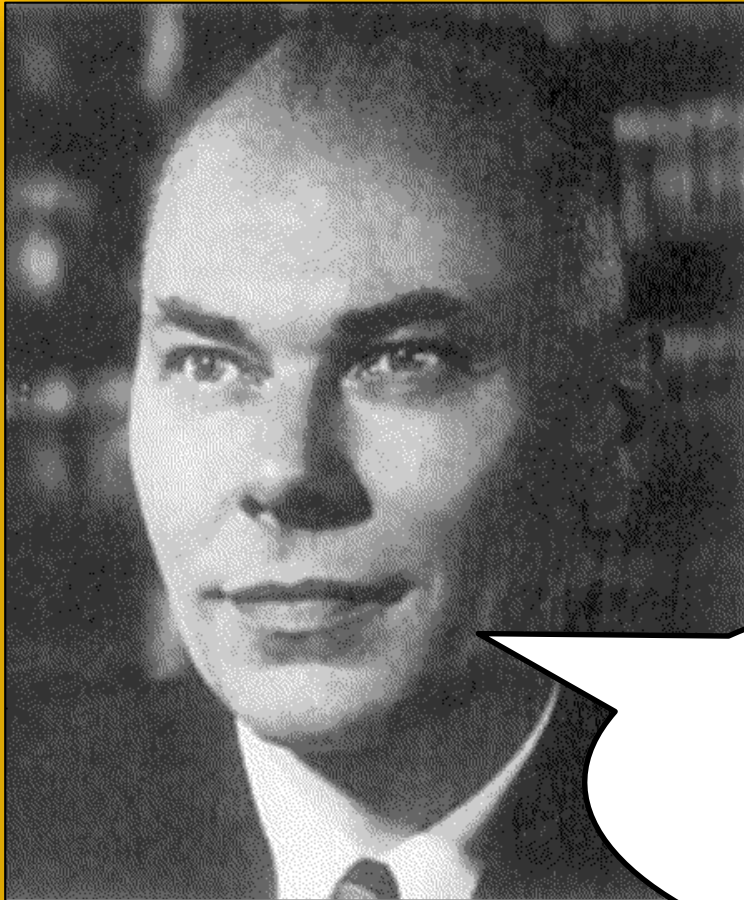
**I invented the ABC, a digital computer, so-called because it processed data using 1s and 0s. Being binary, the data could easily be represented electronically since switches naturally have two states—on and off.**

# Howard Aiken

In 1944, while a professor of physics at Harvard, Howard Aiken was supported by IBM to build the ASCC computer (Automatic Sequence Controlled Calculator). The computer had mechanical relays (switches) which flipped backwards and forwards to represent mathematical data. It was huge and weighed 35 tons with 500 miles of wiring.



# Howard Aiken



As computers were so large and were purpose built for each company, they tended to be very expensive. Howard Aiken was asked about the future of electronic computers. His answer was as follows...

**I estimate that six electronic digital computers would be sufficient to satisfy the computing needs of the entire United States.**



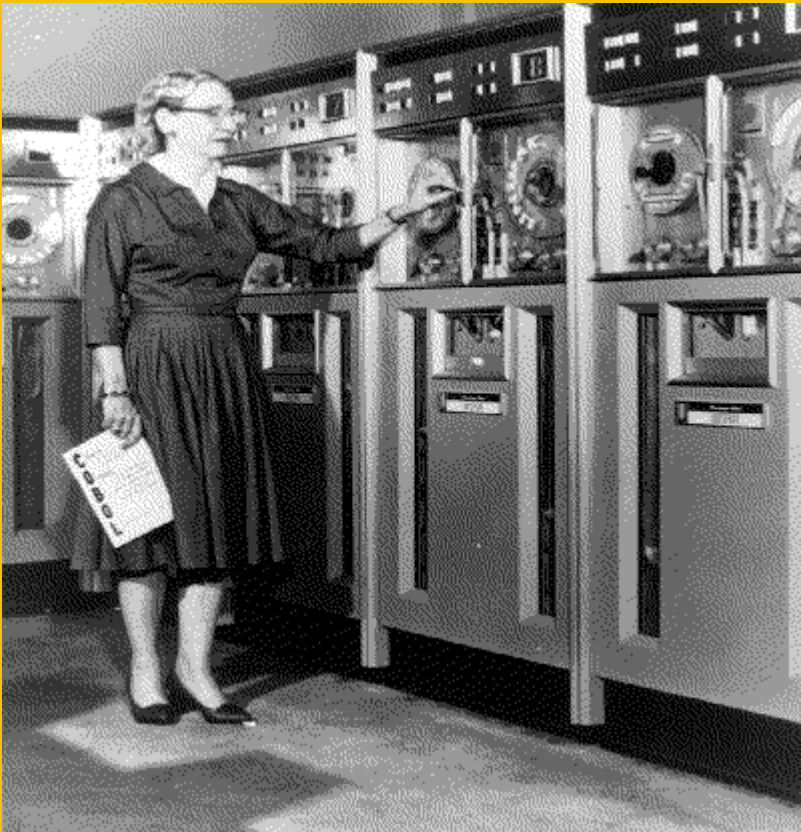
# Dr. Grace Murray Hopper

Rear Admiral Dr. Grace Murray Hopper, worked with Howard Aiken from 1944 and used his machine for gunnery and ballistics calculation for the US Bureau of Ordnance's Computation project.

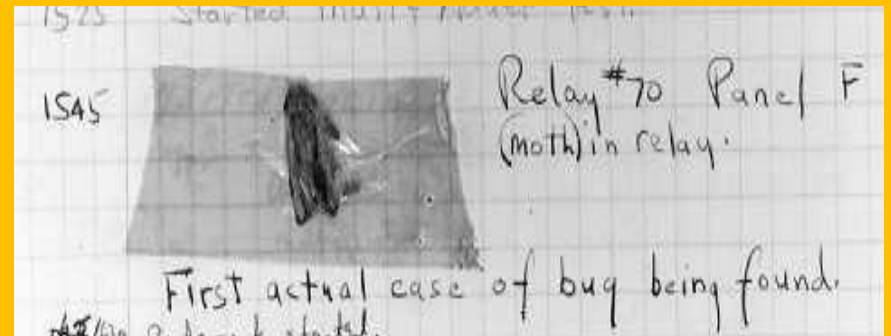
Dr. Hopper greatly simplified programming by inventing the "COBOL" language which was the first programming language to use English for variable names and logical operations rather than machine code.



# Dr. Grace Murray Hopper



She also invented the term “debugging” when a moth flew into the computer and caused an error.



# Valves

Computers used values which were very big and bulky and tended to overheat and blow up.

This made them unreliable.



# Jack Kilby

Jack Kilby invented the first integrated circuit in 1959, which meant computers could become smaller and more reliable.

These were first used inside calculators.



# Microelectronics Revolution



The microelectronics revolution allowed the amount of hand-crafted wiring seen on the left to be mass-produced as an integrated circuit the size of your thumbnail.

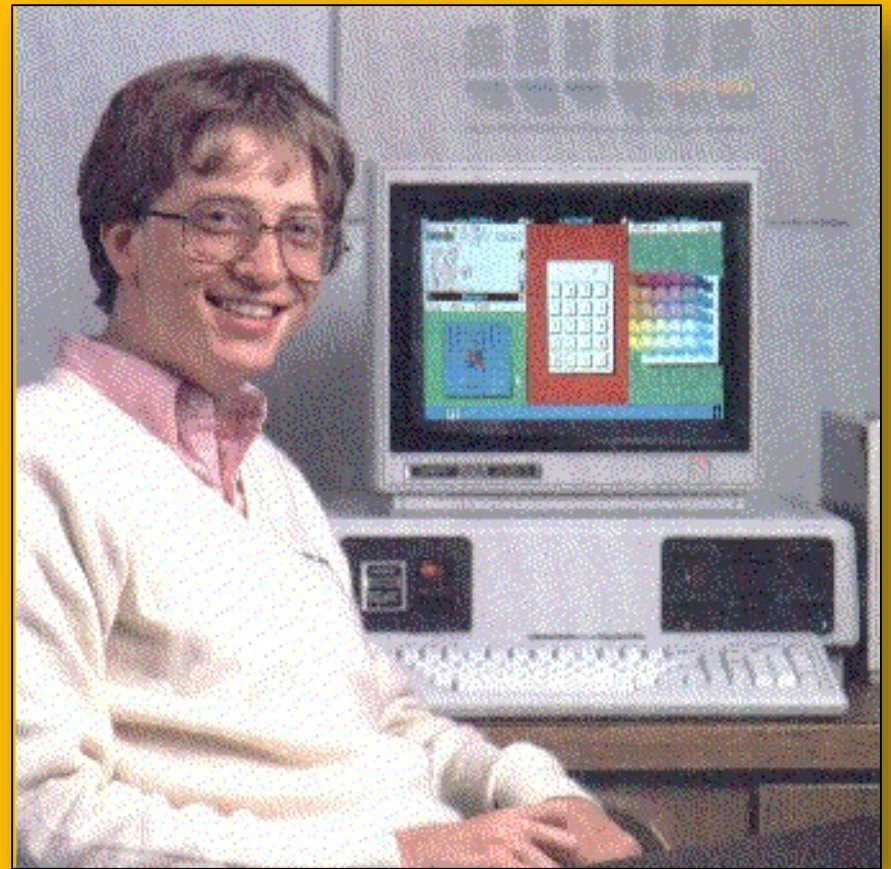




# Bill Gates

At the age of 13 Bill Gates became interested in programming computers.

He sold a computer he built and programmed to Seattle to allow them to count their city traffic when he was still a teenager.



# Bill Gates



Whilst at Harvard University he developed a programming language for his computer.

He decided to drop out of university so he could concentrate all his time writing programs for his computer and started a company called Microsoft to develop software for the newly emerging personal computer market.

# Bill Gates

Bill Gates managed to talk IBM into letting Microsoft make the operating system and Gates proceeded to make a fortune from MS-DOS.

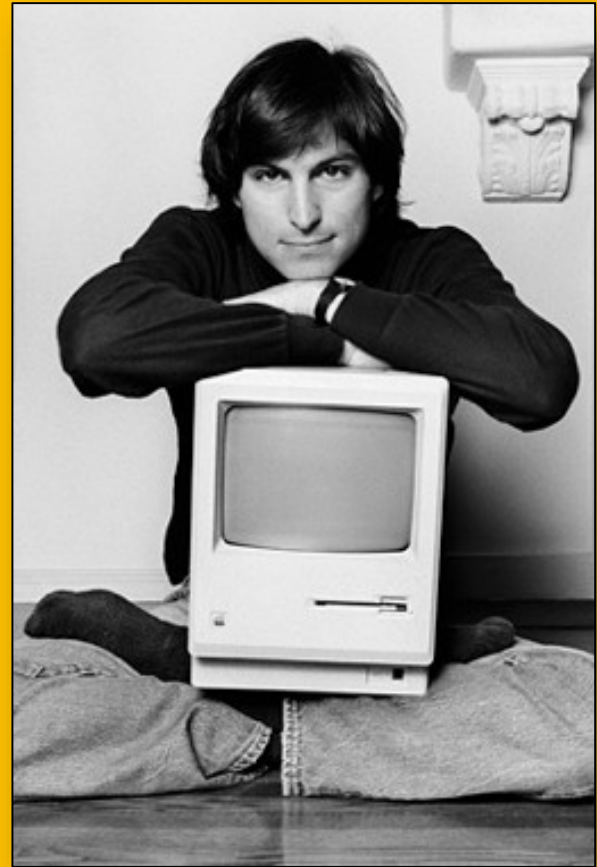
Over the next few years he made billions of dollars and has donated a lot of his fortune to improving the lives of people in developing countries.





# Steve Jobs

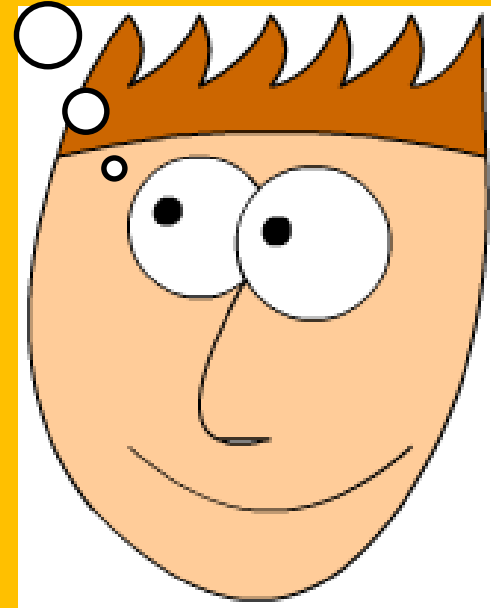
Steve Jobs also dropped out of university at the age of 21 to start his company Apple with another college dropout Steve Wozniak.



# Apple

In 1976 this “Apple I” was one of the first home computers and was sold for \$600

Glad to see things have changed slightly



# Steve Jobs



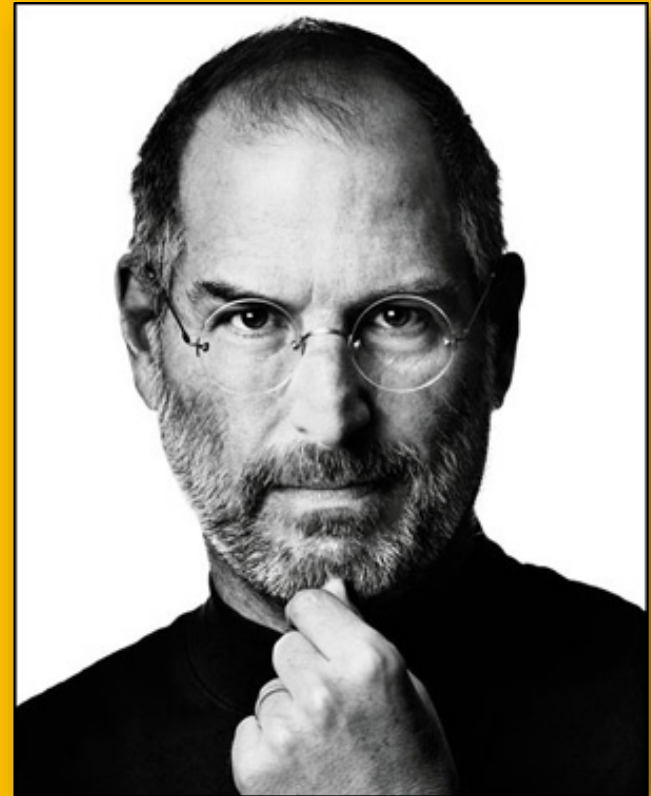
The immense success of Apple 2 revolutionised the personal computer market with the invention of the Graphical User Interface (GUI) which made using the computer very user friendly.

This made Steve Jobs a millionaire at the age of 25.

# Steve Jobs

In 2000 digital music players were big and bulky or small but played terrible quality music.

Apple saw the opportunity and announced the release of the iPod in 2001, the first digital portable music player which changed the course of media entertainment and was followed with equal success by the iPhone and iPad.



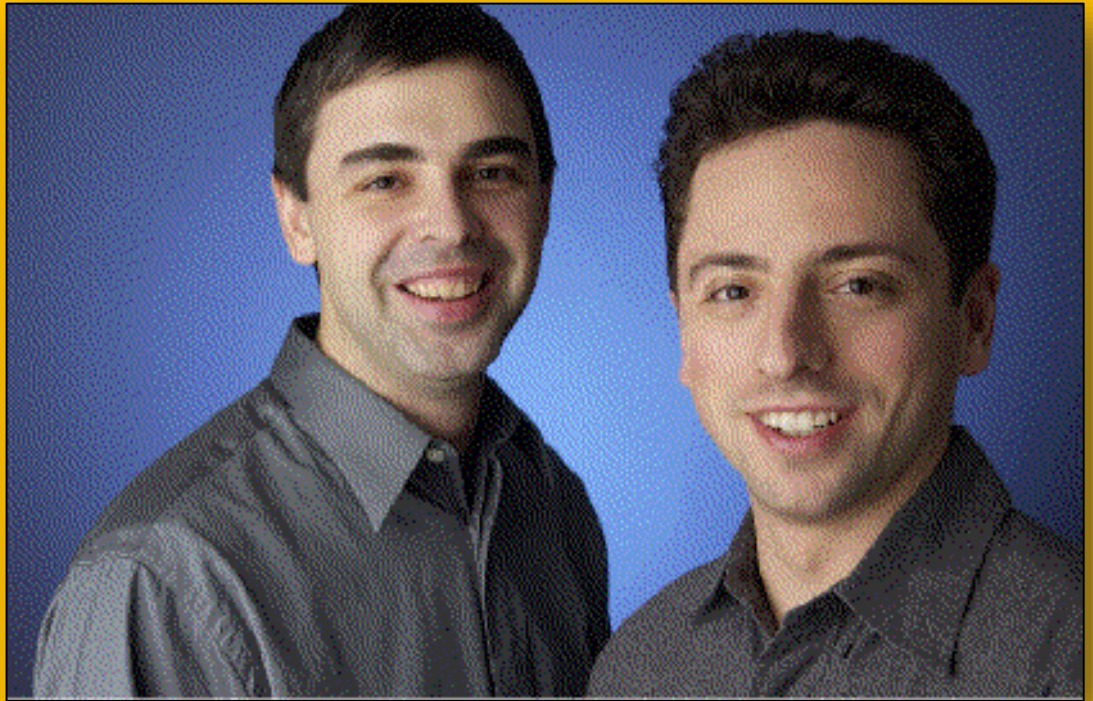
1955 - 2011

# Microsoft v Apple

- In 1994 Apple took Microsoft to court to prevent them using the Graphical User Interface (GUI) components that Apple invented.
- Apple didn't win the case but Microsoft were told to change the "Trash can" icon on the desktop as it was too similar to Apple's version.
- Microsoft changed it to the Recycle Bin.
- In 1998 Microsoft was valued at \$344.6 billion and Apple was only \$5.54 billion.
- By 2011, Apple was valued at \$346.7 billion whilst Microsoft was worth \$214.3 billion. This was the first time that Apple had edged ahead.
- This change is put down to the success of digital music players and smart phones.

# Larry Page and Sergey Brin

Larry Page and Sergey Brin met at Stanford University. They began to work on developing a search engine called “BackRub”



# Google

They decide to rename BackRub to Google – a play on the word “googol” a mathematical term for the number 1 followed by 100 zeros.

This was to show that it was their mission to organise the seemingly infinite amount of information on the internet.



# Google

From a small company that started in a garage to one of the world's largest companies with many diverse areas such as its own email system known as Gmail, Google Maps and Google Books.

On average, Google has been acquiring a company a week since 2010 including YouTube, Motorola Mobility and Android.

In 2011 Google was estimated to be worth \$185.1 billion.





# Key points in modern computing history

**1984:** Apple introduces the Macintosh computer

**1990:** Microsoft introduces Windows 3.0

**1992:** Microsoft introduces Windows 3.1

**1996:** BackRub was created and launched onto Stamford Universities' servers

**1997:** BackRub given a new home and changed to the name Google.

**2000:** Bill Gates relinquishes his title as head of Microsoft and Microsoft Windows 2000 was released

**2001:** Wikipedia was founded

**2001:** Microsoft Windows XP is released

**2005:** Google purchases Android

**2005:** YouTube was founded and appears online

**2006:** Google buys YouTube

**2006:** Nintendo releases the Wii

**2007:** Apple introduces the iPhone

**2007:** Microsoft releases Microsoft Windows Vista and Office 2007

**2010:** Apple introduces the iPad

**What are the key points in the development of computing for the last 10 Years?**