

Computer software Operating Systems



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Lecture bonus with Mentimeter

New bonus system

Two bonus points (1%) can be awarded in each lecture if:

1. Providing a valid **full name** at the Mentimeter test
2. **>3 correct answers** out of the 4 online test questions

Participation:

- Mobile devices with installed Mentimeter application
- Online device with internet access <http://www.menti.com>



BONUS!

Hardware and software

Hardware

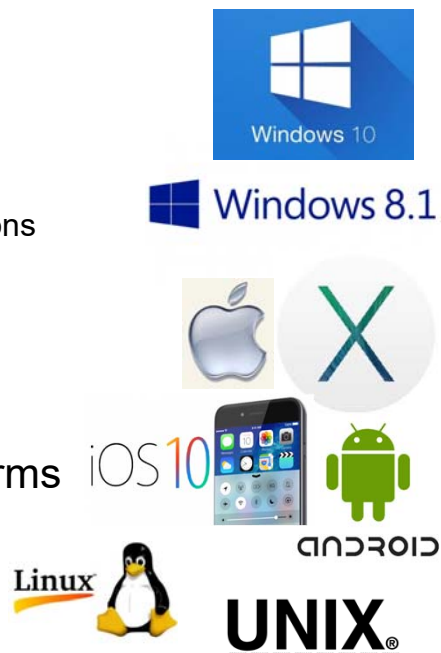


Software



Content

- Operating systems
 - Tasks, properties, versions
 - PC
 - Tablet (smart phone)
- System software
- Network software
- Malware, viruses, worms



Computer software

- The term '**software**' was first used by John Tukey in 1958
- Collection of computer programs, procedures and documentation that performs different tasks on a computer system

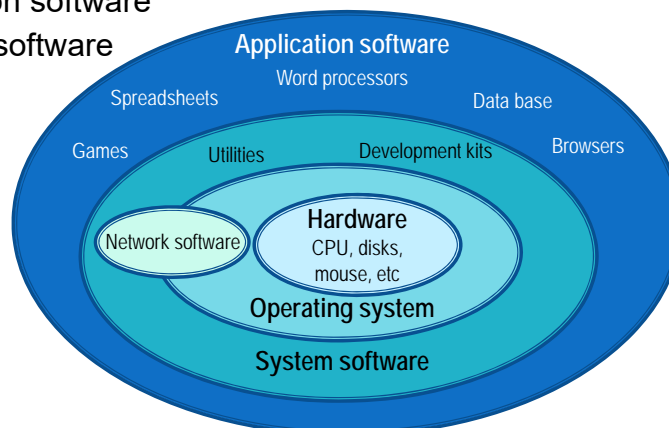


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Major Types of Software

Based on their function, the software types are

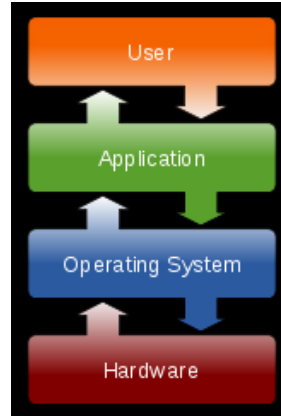
1. Operating systems
2. System software
3. Application software
4. Network software



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1. Operating system

- Provides common services for efficient execution of various application software
- Enables human input via a **user interface**



Examples: DOS, Windows, OS/2, Linux, BeOS, UNIX, MacOS, OS/400

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1. Operating system- Tasks



Examples: DOS, Windows, OS/2, Linux, BeOS, UNIX, MacOS, OS/400

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Operating systems: properties

Users



Managing tasks



User interface



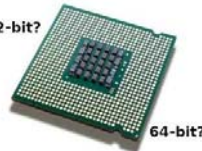
Specialities



File name length and special characters.htm

aA

32-bit?



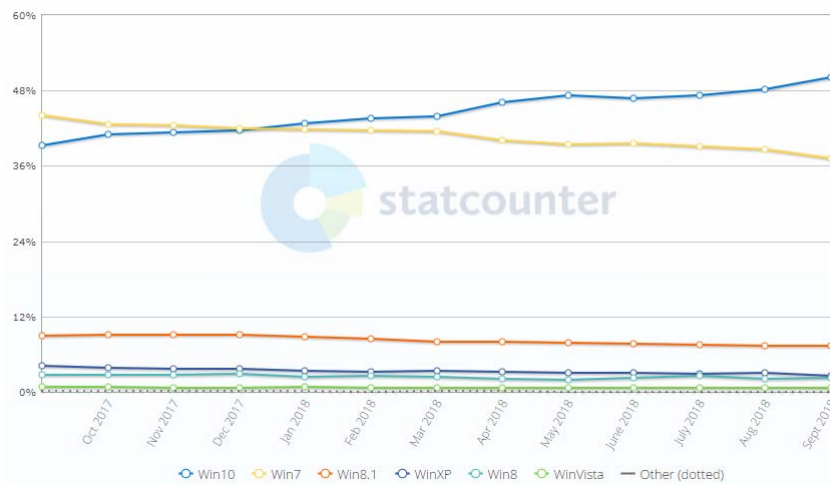
64-bit?



Operating systems: personal computers

Desktop Windows Version Market Share Worldwide
Sept 2017 - Sept 2018

[Edit Chart Data](#)



Windows 10 editions

Home: for home use

Pro: professional version for small business purposes, cloud technology

Enterprise: for larger units

Education: for higher education, enhanced data safety and protection

Mobile (Mobile Enterprise):
for Windows Phone

32-bit vs. 64-bit versions:

Only 64-bit systems can address more than 4GB of RAM



More than 1.5 billion people use Windows every day

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Windows 10 new features

Hybrid Start menu: left: recently used applications, right: tiles to launch programs

Edge: new internet browser allowing notes, highlights on web pages

Windows Hello: face fingerprint, iris recognition

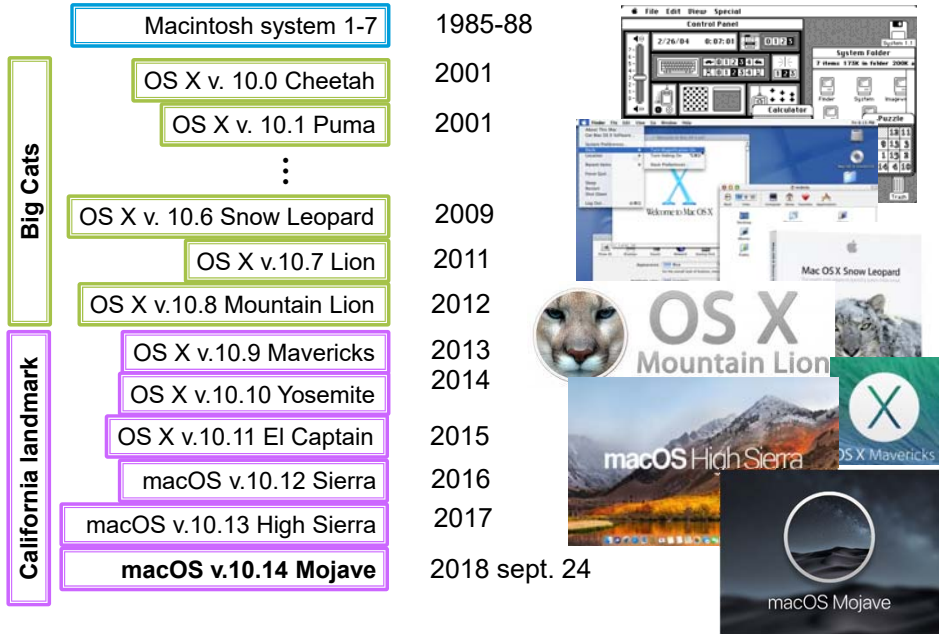
Cortana: personal assistant ☺

Platform independence: universal applications can be used on computers and mobile phones interchangeably



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Apple Macintosh OS history



Standard PC or tablet?



„Tablets Will Overtake Laptops in 2013”

<http://allthingsd.com>

Tablet operating systems

Android: Google (2005)



Open source (source code is public)
Linux-based

iOS: Apple (2007)



Software Developer Kit (Apple's fee 30%)
XNU kernel (X Not Unix)

Windows 7, 8, 10: Microsoft
Tile-based start screen
32 and 64-bit editions

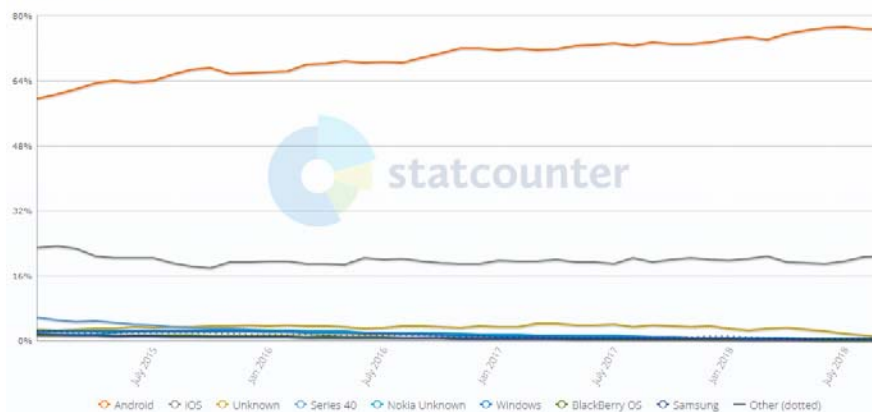


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Mobile operating systems

Mobile Operating System Market Share Worldwide
Jan 2015 - Sept 2018

Edit Chart Data



Over 1.4 billion people are now using Android

Android versions

1.0 (2008 September 23)

*The first Android device HTC Dream
Download and updates via Android Market*

2.0 Eclair (2009, October 26)

Live Wallpapers, Updated UI, HTML support, Bluetooth 2.1

3.0 Honeycomb (2011, February 22)

Optimized tablet support and UI, 3D desktop

4.0 Ice Cream Sandwich (2011, October 11)

Wi-Fi direct, Adobe Systems' Flash player

4.2 Jelly Bean (2012, October 29)

Wireless charging

5.0 Lollipop (2014, June 25)

Refreshed notification, improved battery use

6.0 Marshmallow (2015, October 5)

Fingerprint management, save battery life

7.0 Nougat (2016, August 22)

Daydream virtual reality platform (VR), Shared screen

8.0 Oreo (2017, August 21)

Picture-in-picture mode, Bluetooth 5, Voice over Internet Protocol



In 2007, when Android was unveiled, Nokia made a statement "we don't see this as a threat" 17

Android versions



Alpha
A



Beta
B



Cupcake
C



Donut
D



Eclair
E



Froyo
F



Gingerbread
G



Honeycomb
H



Ice Cream Sandwich
I



Jelly Bean
J



KitKat
K



Lollipop
L



Marshmallow
M



Nougat
N



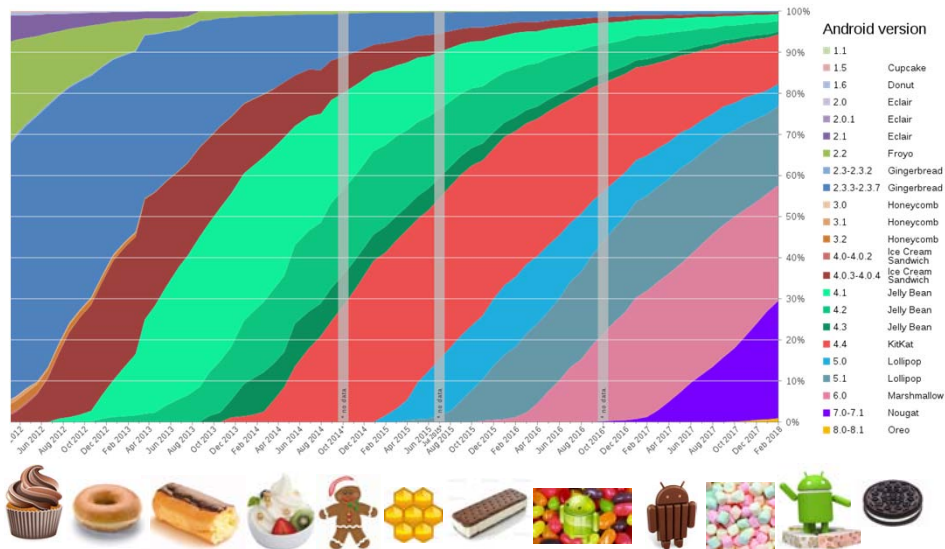
O

Name of version 9?

P



Android versions: dessert items



Wikipedia

The word Android refers only to a male robot, whereas a female robot is called "Gynoid"

iOS versions

iPhone Firmware 1.0 (2007, Aug 1)



iOS 6 (2012, September 19)

Apple-created Maps, Do Not Disturb, Passbook, Facebook integration

iOS 7 (2013, June 10)

Buttons redesigned, New UI for arranging tab-bar icons, System-wide dynamic font size, configurable in Settings

iOS 8 (2014, June 2)

Redesigned UI.

iOS 9 (2015, Sept 16)

Carplay, Health, UV exposure, water intake, photo management, stability improvements, etc.

iOS 10 (2016, Sept 16)

Allow hiding home screen icons, Advanced face recognition, gender diverse emoji

iOS 11 (2017, Sept 19)

3D touch icons, Battery life improvement, fixed calculator, Siri translator, etc.

iOS 12 (2018, Sept 17)

Apple books, Compass, Measure (augmented reality), Voice memos, etc.

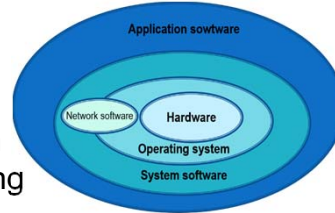
Measure (augmented reality)



Major types of Software

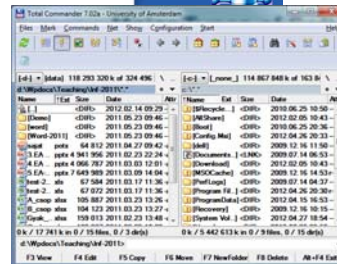
2. System Software

Run the computer hardware and system by extending the services of the operating system



Two subgroups:

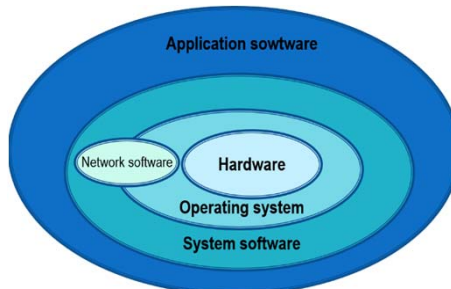
- **Development kits** (programming software)
e.g. Microsoft Visual Studio, Labview
- **Utilities**
 - e.g. file managers
 - anti virus
 - file compression software



Major types of Software

3. Application software

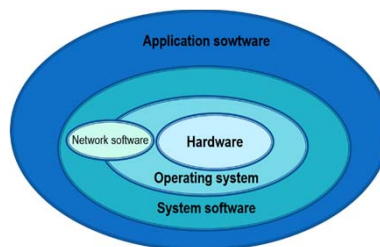
- **General-purpose application software**
 - Office software packages
 - Games
 - Design software
 - Web browsers
 - Graphical program packages
 - Statistical software packages
- **Special-purpose software**
To execute unique tasks.
 - Data collection
 - Data processing
 - Etc.



Major types of Software

4. Network Software

- network extensions of the operating systems (e.g. sharing folders or printers)
- Network operating systems
 - Novell Open Enterprise Server (Netware)
 - MS Windows 2008 server



Novell.



„Computers are like bikinis. They save people a lot of guesswork.“ (Sam Ewing)

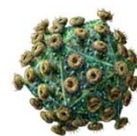
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Malware, viruses and worms

Malware: malicious software

Virus: attached to program or file

- automatic execution
- replicates itself



Worm: no host file, no human action



Trojan horse: looks desirable



Spyware: secretly collects



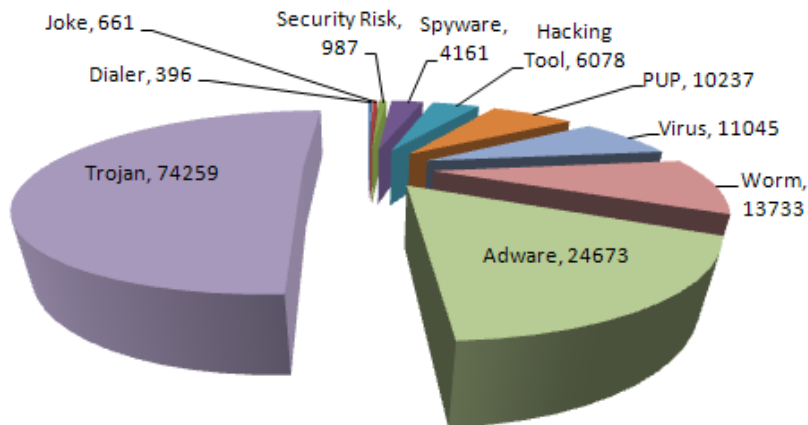
Adware: secretly working program
deploying junk ads



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Malware, virus, worm, trojan

Number and Types of Malware in U.S.

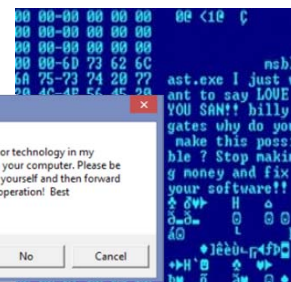
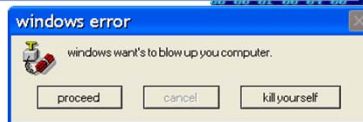


Source: news.cnet.com

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Why Do People Create Computer Viruses?

- Prove they can
 - I love you (2000)
- Gain control (hack) a computer
- Gain money
- Steal sensitive information (credit card numbers, passwords, personal details, data, etc.)
- Revenge against a company
- To paralyze a computer or network (military)
 - Stuxnet (2010), DarkSeoul (2013)



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Virus to gain money (ransom virus)

Country: US United States
 Region: California
 City: Los Angeles
 ISP:
 Operating System: Windows 7 (64-bit)
 User Name:

ATTENTION! Your PC is blocked due to at least one of the reasons specified below.

You have been violating "Copyright and Related Rights Law" (Video, Music, Software) and illegally using or distributing copyrighted content, thus infringing Article 1, Section 2, Clause 8, also known as the Copyright of the Criminal Code of United States of America.

Article 1, Section 2, Clause 8 of the Criminal Code provides for a fine of 200 to 500 minimal wages or a deprivation of liberty for 2 to 8 years.

You have been viewing or distributing prohibited Pornographic content (Child Porn/Zoophilia and etc). Thus violating Article 2, Section 1, Clause 2 of the Criminal Code of United States of America. Article 2, Section 1, Clause 2 of the Criminal Code provides for a deprivation of liberty for 4 to 12 years.

MoneyPak Voucher NO./PIN:
 Amount:

1 2 3 4 5 6 7 8 9 0

Pay MoneyPak

Where can I buy MoneyPak?

Walmart CVS pharmacy RITE AID Kmart Walgreens

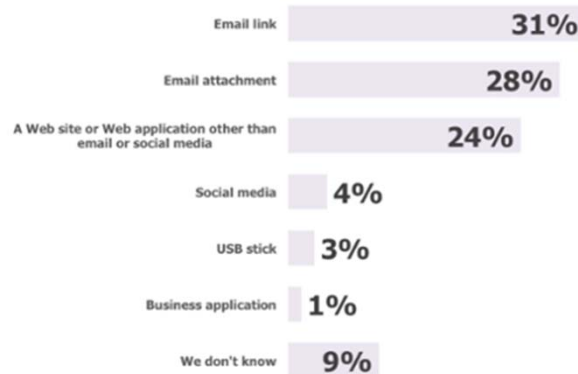
How do I unblock the computer using the MoneyPak?

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Virus use to gain money (ransom virus)

The Ransomware Business is Booming: Nearly 50 percent of organizations have been hit with ransomware!

Figure 12
 Applications by Which Ransomware Entered the Organization



Source: Osterman Research, Inc.

<https://blog.barkly.com/ransomware-statistics-2016>

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Trojan horse: example



From: **Manager Matias Nash** [Hide](#)

To: <rich>

Bcc: <rich@hotmai.com> <richard@gmail.com> <rich@woh.r.com>

Shipping Service
February 17, 2013, 5:42

FedEx
Tracking ID: 5052-79289743
Date: Monday, 11 February 2013, 10:22 AM

Dear Client,

Your parcel has arrived at February 14. Courier was unable to deliver the parcel to you at **14 February 06:33 PM**.

To receive your parcel, please, print this receipt and go to the nearest office.

[Print Receipt](#)

Best Regards, The FedEx Team.

FedEx 1995-2013

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Phishing and whaling

Attempt to acquire sensitive information in an electronic communication:

- usernames, passwords, credit card details



Lloyds Bank Account Status Notice!

1 message

Lloyds Bank <noreply@eml.com>
To: Recipients <noreply@eml.com>

1 March 2014 09:02

Valued Customer,

Recently, we noticed that someone has made suspicious attempts to log into your online account from this (IP) address "194.78.58.90"

Therefore our security commitment forces us to block your account temporarily until you verify your identity on our systems.

[Click Here To Continue](#)

Customer Service
Lloyds Banking Group PLC 2014.

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Virus protection

- Regular backup of important files
- Never open unknown attachment or link
- Use firewall
- Run antivirus program regularly
- Run Spy-ware & Ad-ware detection programs regularly
- Update operating system regularly

