**scheduling tasks** and performs all the basic tasks like file management,

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**memory management**, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.

**An Operating System** is an interface between a computer user and computer hardware.

Applications and Apps: mobile, Web, local.

A Web app is software that is accessed with a

**Web browser**. Instead of running locally, much of the program code for the software

runs on a remote computer connected to the Internet or other computer network. Most Web apps require no installation at all on your local computer or handheld device.

A **mobile app** is designed for a handheld device, such as a smartphone, or tablet computer. mobile apps run from the handheld device, so they have to be downloaded and installed.

**Games and entertainment** seem to dominate mobile apps, whereas shopping and social apps dominate the Web apps category.

**Local applications** are installed on a computer's hard disk. When you install a local application, all of its files are placed in the

**appropriate folders** on your computer's hard disk, and then your computer performs any software or hardware configurations necessary to make sure the program is ready to run.

A **copyright** is a form of legal protection that grants the author of an original work an exclusive right to copy, distribute, sell, and modify that work.

**A software license**, or license agreement, is a legal contract that defines the ways in which you may use a computer program.

Based on licensing rights, proprietary software is distributed as commercial software, demoware, **shareware, freeware,**

**and open source software**.

Software piracy refers to illegal using, copying and/or distributing a piece of software that’s subject to copyright. According to the Business Software Alliance (BSA), about 36% of all software in current use ]

**is stolen**.

Software piracy has more than 1 form, such as сopying a software program that

**you purchased legitimately** in order to distribute it to other end users like friends, family, or anyone else through online means

**like torrenting**; using a method known as

**“cracking”** to access protected & copyrighted software that you didn’t purchase and others.

**6. Comp netw.** Today we cant imagine our life without any networks. Nowadays networks are everywhere and everyone wants to be connected.

**Network** – group of devices that connected between each other. Networks can be classified according to their size and geographic scope:

**PAN** – occupies a small area, not more than 10 meters. **LAN** – one building or 2 buildings that stands close. **MAN** – covers cities.

**WAN** – large geographic area, world. The most important network device is a

**router,** which acts as a central distribution point for getting data to its destination.

**Data** in a net. with wired connections travels from one device to another over cables. Wired connections are fast, secure and simple to configure. An example of wired net. technology is

**Ethernet.** A wireless net. transports data through the air. Wireless connections transport data as

**RF signals** (radio frequency),

**microwaves** and **infrared light beams**. The most popular wireless technology is

**WI-FI**. **Net. protocol** – set of rules, that are necessary to communicate comp. with other net. devices.

**Netw. architecture:** Client-to-client – type of net., that has a dedicated server - (star). Peer-to-peer – …, without any server.

**Topologies:** Star – one central point for all devices.Bus – all nodes are connected to the same circuit**.** Full mesh – connects each network device to many other net. devices**.** Partial mesh – some devices are connected to many others**.** Point-to-point – connected directly.

**Types of inet connection**:

**Dial-up** – Inet connection that uses a voiceband modem and telephone lines to transport data between ur computer and ur ISP, slow speed.

**DSL** – uses nowadays – fast, broadband inet connection. **Cable** – uses cable TV conn,

fast, broadband inet conn**.** 3G/4G – wireless inet conn used by smartphones**.**

**Technologies** of the

Web: browser, URL (uniform resource location), HTTP, HTML (hypertext markup language – set of elements that author uses to mark up the document)**.**

**IoT** – physical digital devices, share data with other devices, makes analytics and decisions**.**

**IoT elements**: chips, platforms, analytics, sensors, gateway, apps**.**

**IoT apps**: smart home, industry energy production, medicine**.**

**Benefits** of IoT: enterprises benefit from using IoT when a component is likely to fail and to swap it out before it causes damage, make life smarter, more comfortable and easier (routine tasks)**.**IoT **challenges**:Lack of regulations ( government regulation often takes a long time to catch up with current state of technology**.**

Understanding IoT ( how to use it?)**.** Challenges with compatibility (not all devices can be connected with other)**.** Cloud attacks (cybercriminal, cloud servers can be attacked by hackers)**.**

Limited AI (people can’t use AI how they need, most of the current AI offerings on the market have substantial limits) (6)

**7. Information systems** are

combinations of hard, software and t

**elecommunication**s netws built to collect,

**syntax error** - occurs when an instruction doesn’t follow the syntax rules, or grammar, of the prog l. **runtime er -** occurs when a program runs.

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**logic er** – occurs when there is logic or design problem, such as using the wrong formula. There are 2 main **development methodologies:**

**A predictive**- focuses on rigorous development. Almost doesn’t change during the project. Used for large software development projects.

**An agile -** focuses on flexible developmen, that evolve as a project progresses. Programmers produce a subset of the project, show it to users, and then plan the next phase of development.

**Object-Oriented Prog –** it’s one of the main prog methodologies, which is based on the idea that a program is a set of objects, each belonging to a certain class and the classes build up an inheritance hierarchy. **Object** - is a data field that has unique attributes and behaviour.

**Class** - is a template for a group of objects with common characteristics.  
**Method** - is a segment of code that defines an action. **Message** - activates Method. The set of superclasses and subclasses that are related to each other is referred to as a **class hierarchy.**

**Pillars of OOP:** Encapsulation – break connection between objects. Inheritance – for using in future, avoid the repetitive coding work. Polymorphism – ability of object to take different forms. Abstraction – shows only necessary information (attributes).

**Artificial Intelligence (AI)** - is a method of prog a comp, robot, or other objects to think like a smart human. It’s becoming important in today’s world because it can efficiently solve problems in a variety of areas, including healthcare, entertainment, banking, education**.**

**AI vs ML**: AI broader concept, while ML is the most common application of AI(apps: Spotify, Apple Mus). In future AI will outperform humans in relatively simple tasks such as translating, driving car etc.

**AI + /-:** + efficiency, accuracy, cost-saving. - high cost of creation, upgrade; making human lazy, unemployment, lacking out of the box thinking.

**VR** and **AR** are the two sides of the same coin.

**AR** simulates artificial objects in the real environment; **VR** creates an immersive artificial environment. (8)

**+/-**: + can be used for training, education; in game industry; train for real-life situations; automate many task. - they require expensive hw and sw to create and use; disconnecting from the real world.

**Game progg** – process of creating video game.

**Genres:** simulation (copy different activities from real life); strategy (focused on skillful thinking and planning to achieve victory); role-playing (players assume the roles of character); adventure; puzzle.

**Components**; art, characters, lvls, audio, lighting, story. **Ls**: С++, C# , Python, Java, JavaScript, Swift.

**Robotics** –it’s the science and study of robots**.**

**Robot** – computer-controlled machine that is programmed to move, manipulate objects, perform work. **Types of robots:** *Virtual robots* – don’t exist in real life, they’re just programs. *Rolling robots* – have wheels, only flat areas. *Stationary robots* – stand at one place, has some settings. *Autonomous robots* – self-supporting *. Walking robots* – have legs, not only flat areas. *Remote-control robots* – guided by a person (drones). (8)  
**Components of robots:** Motor of some sort, Sensory system, Movable physical structure (end-effectors), Power supply, Program,

Computer “brain” (CPU). **+:** life easier, Saves people from difficult work, Boost productivity. **-:** Increasing unemployment and e-waste, May have failures, Always in need of service and energy.

**9. Digital security. A user ID** is a series of characters – letters, numbers or special symbols – that becomes a person’s unique identifier.

**A password** -//- that verifies a user ID and guarantees that you are the person you claim to be. The term **authentication protocol** to refer to any method that confirms a person’s identity using something the person knows, something the person possesses, or something the person is. A person can also be identified by biometrics, such as a fingerprint, facial features, or a retinal pattern. When someone gains unauthorized access to your personal data and uses it illegally, it’s called **identity theft**. Ways to steal a password:

**The brute force attack** exhausts all possible combinations of letters to decrypt a password.

**Sniffing** intercepts information sent out over computer networks. **phishing**, in which a hacker poses as a legitimate representative of an official organization such as ur ISP in order to persuade you to disclose highly confidential information.

A **key logger** is sw that secretly records a user’s keystrokes and sends the inf to a hacker. A key logger is a form of malicious code called a Trojan.  
**Trojans** are computer programs that seem to perform 1 function while actually doing something else.

A **password manager** stores user IDs with their corresponding passwords and automatically fills in login forms. tips for

**protection your portable computer from theft**: Never leave ur portable comp unattended; If u have to leave ur portable comp in ur car, never

leave it in plain view. Lock it up in the trunk or cover it up;

Carry ur portable comp in an inconspicuous carrying case; Consider securing ur portable comp with an anti-theft device.

How to Do a Summary of an Article

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1. Название статьи, автор, стиль.

The article I’m going to give a review of is taken from… — Статья, которую я сейчас хочу проанализировать из…

The headline of the article is — Заголовок статьи…

The author of the article is… — Автор статьи…

It is written by — Она написана …

The article under discussion is … — Статья, которую мне сейчас хочется обсудить, ….

The headline foreshadows… — Заголовок приоткрывает

2. Тема. Логические части.

The topic of the article is… — Тема статьи

The key issue of the article is… — Ключевым вопросом в статье является

The article under discussion is devoted to the problem… — Статью, которую мы обсуждаем, посвящена проблеме…

The author in the article touches upon the problem of… — В статье автор затрагивает проблему….

I’d like to make some remarks concerning… — Я бы хотел сделать несколько замечаний по поводу…

I’d like to mention briefly that… — Хотелось бы кратко отметить…

I’d like to comment on the problem of… — Я бы хотел прокомментировать проблему…

The article under discussion may be divided into several logically connected parts which are… — Статья может быть разделена на несколько логически взаимосвязанных частей, таких как…

3. Краткое содержание.

The author starts by telling the reader that — Автор начинает, рассказывая читателю, что

At the beginning of the story the author — В начале истории автор

describes — описывает

depicts — изображает

touches upon — затрагивает

explains — объясняет

introduces — знакомит

mentions — упоминает

recalls -вспоминает

makes a few critical remarks on — делает несколько критических замечаний о

The story begins (opens) with a (the)

description of — описанием

statement — заявлением

introduction of — представлением

the mention of — упоминанием

the analysis of a summary of — кратким анализом

the characterization of — характеристикой

(author’s) opinion of — мнением автора

author’s recollections of — воспоминанием автора

the enumeration of — перечнем

In conclusion the author

dwells on — останавливается на

points out — указывает на то

generalizes — обобщает

reveals — показывает

exposes — показывает

accuses/blames -обвиняет

mocks at — издевается над

gives a summary of -дает обзор

4. Отношение автора к отдельным моментам.

The author gives full coverage to… — Автор дает полностью охватывает…

The author outlines… — Автор описывает

The article contains the following facts…./ describes in details… — Статья содержит следующие факты …. / подробно описывает

The author starts with the statement of the problem and then logically passes over to its possible solutions. — Автор начинает с постановки задачи, а затем логически переходит к ее возможным решениям.

The author asserts that… — Автор утверждает, что …

The author resorts to … to underline… — Автор прибегает к …, чтобы подчеркнуть …

Let me give an example… — Позвольте мне привести пример …

5. Вывод автора.

In conclusion the author says / makes it clear that…/ gives a warning that… — В заключение автор говорит / проясняет, что … / дает предупреждение, что …

At the end of the story the author sums it all up by saying … — В конце рассказа автор подводит итог всего этого, говоря …

The author concludes by saying that../ draws a conclusion that / comes to the conclusion that — В заключение автор говорит, что .. / делает вывод, что / приходит к выводу, что

6. Выразительные средства, используемые в статье.

To emphasize … the author uses… — Чтобы акцентировать внимание … автор использует

To underline … the author uses… Чтобы подчеркнуть … автор использует

To stress… — Усиливая

Balancing… — Балансируя

7. Ваш вывод.

Taking into consideration the fact that — Принимая во внимание тот факт, что

The message of the article is that /The main idea of the article is — Основная идея статьи (послание автора)

In addition… / Furthermore… — Кроме того

On the one hand…, but on the other hand… — С одной стороны …, но с другой стороны …

Back to our main topic… — Вернемся к нашей основной теме

To come back to what I was saying… — Чтобы вернуться к тому, что я говорил

In conclusion I’d like to… — В заключение я хотел бы …

From my point of view… — С моей точки зрения …

As far as I am able to judge… — Насколько я могу судить .