**1.Our University: brief historical survey**

The early history of the University began in 1859, when the Gory-Goretsky Agricultural Institute welcomed the first students of the Forestry program, who were trained for careers in agronomy and forestry with the opportunity of obtaining a PhD degree in these fields. Forestry faculties were established in 1919 at the Gory-Goretsky Agricultural Institute and in 1920 in Minsk Polytechnic Institute. At the beginning of the Great Patriotic War the Institute was evacuated to the city of Sverdlovsk. After liberation of Gomel from German fascist invaders the Institute was re-evacuated to Gomel. In August 1946 the Institute was transferred to Minsk. Real flourishing of the Technological Institute started at the end of the 80s and was brought about by intensive development of science. In 1993 the Government of the Republic of Belarus granted the Institute with the university status (Belarusian State Technological University). The University began training specialists for the careers in different sphere. The Belarusian State Technological University was granted the status of a leading higher educational institution in the fields of forestry and forest industry. The University was awarded the Honorary State Banner of the Republic of Belarus and the Honorary Diplomas of the Ministry of Education of the Republic of Belarus.

**2. Our University: scientific and research work**

Academic and educational work at the University is carried out within the following main lines: development of new curricula; new forms of teaching process organization, including individual work of students; teaching process support with necessary resources, textbooks and teaching aids, multimedia; IT-based teaching, etc. The University uses innovative competency-based approach to teaching in accordance with up-to-date conceptual model. The University houses 10 faculties, the Institute for retraining and professional development, 53 departments, 20 affiliated departments, 5 affiliated colleges, affiliated forestry experimental station in Negoreloe. The teaching process at the University is organized in the following way. The academic year is divided into two terms. During the terms students attend lectures and carry out laboratory and practical work. At the end of each term students pass credit tests and sit exams. The course of studies lasts 4-5 years. At the end of the course of studies, students sit the State Examination and defend Diploma paper (project). The BSTU research activities are supported by various scientific units. The University scholars are active participants of scientific and technical programs of various scope. International cooperation is among the top priorities of the University activities, having old and well-established traditions of international networking. Internationalization is an important component of Belarusian State Technological University’s strategy, enabling academic staff and students of the university to be globally active and well prepared for future challenges.

**3. BSTU today. Student life**

Student life is the most exciting and challenging time for students to explore new horizons and set a course for the future. The Belarusian State Technological University gives the chance to make new friends and enjoy new hobbies or sports, to explore opportunities and gain experiences that can change your life. The student campus houses five dormitories where students can rest and study. The student organizations in campus enrich the social, cultural, and educational experiences of students. One of the conditions for harmonious development of personality is physical training, promoting a healthy lifestyle, which the University pays great attention to. Students show their organizational and creative skills in the activities of the primary organization of the Belarusian National Youth Union. The youth information group and a number of volunteer teams are working successfully at the University. Youth student leisure centre unites creative students and helps to reveal their abilities in the club of intellectual games, in artistic groups, social events, discotheques.

**4.Science and Technology: the importance of inventions to the progress of humanity**

Modern civilization is everything that has been achieved thanks to science. We can’t but agree that science is very important and that it develops our world. But what is science? Science is systemized knowledge derived through experimentation, observation, and study. The unity of human knowledge may be artificially divided into religion, philosophy, and science. Every human being possesses two strong impulses: to create and to explore. In their work scientists use different methods, techniques and approaches. They build up theories, perform experiments, explore, carry out researches, discover and invent. That is why people have always explored, created and invented something.

Technology is an important part of our lives. We use computers and other electric equipment at work and at home. However, some people believe we rely too much on machines. Technological advances are changing our lives very rapidly. Nowadays we can't do without gadgets. Technology facilitates our lives and saves our time. However, many people say that technology makes us lazier and weaker. The Internet has revolutionized the way people live and work. However, there are still a lot of people who think that the Internet has too many disadvantages. Internet-addiction is a topical problem nowadays. Artificial intelligence performs quite a lot of jobs nowadays. Computers and robots are very helpful. Computers can perform a lot of functions: they can control cars and planes, give us the news or compose music. Many factory jobs are per-formed by industrial robots nowadays. Scientists have always dreamed of reproducing exact copies of animals and even human beings. To sum up, people should continue to develop technology, but they must do it wisely. Otherwise, we may regret in the future.

**5. Science and Technology: inventions, famous scientists and inventors**

The telephone is one of the most important inventions of the 19th century. Its creator was the English scientist Alexander Graham Bell. He also organized his own company to produce telephones.

The television is a mass media that serves to give people opportunities both for entertainment and for rapid information. The idea of a machine able to broadcast both sound and vision goes back to 1875. But it wasn’t until 1926 that a Scottish engineer (John Braid) turned the idea into a practical reality. The first pictures were black and white and were not very clear.

One more important invention of our century is the computer. The first computer was invented by the English scientist Charles Babbage. Nowadays nearly everything we do in the modern world is helped and controlled by computers.

Modern mobile phone provides a lot of services, from being able to message anyone to immediate access to the internet. However, we do not know that the name of the inventor of the first cellular phone, the talented American engineer Martin Cooper.

Isaak Newton discovered the law of motion and the universal law of gravitation.

Michel Faraday made the machine which was the father of all the great machines that make electricity today. Also Faraday was the creator of the electric motor, which changed the face of the earth.

Thomas Edison invent light bulb and the way of sending electricity to distant places. He is also famous for early microphone, record player and equipment for the cinema, telegraph and telephone.

Mikhail Lomonosov made a lot of achievements in astronomy and mineralogy;

Dmitry Mendeleev who created the periodic table of elements;

Ivan Pavlov who studied conditioned reflexes in animals;

Konstantin Tsiolkovsky who created the theory of space flight;

Sergei Korolyov who designed the intercontinental missile, Sputnik satellite, and Vostok spacecraft;

Igor Kurchatov who made a lot of inventions in nuclear physics;

Andrei Sakharov who invented the hydrogen bomb.

Many of things which make our lives easier today were invented by women. Let’s take the dishwasher for example. This was invented by a woman called Josephine Cochrane.

Mary Anderson, who in solved one of the biggest problems of driving. She invents windscreen wipers.

A fantastic invention that definitely improved the lives of millions of people was disposable nappies. They were invented by a woman called Marion Donovan.

Betty Nesmith Graham was inventing Tipp-Ex.

Stephanie Kwolek invented kevlar, a special material which was very light but incredibly strong, much stronger than metal.

**6. Information Technology Industry in Belarus**

In the past several years Belarus has earned the reputation of the leading “IT country” in the Eastern European region. Three companies with Belarusian roots entered the top-100 of the largest world companies in this sphere: EPAM Systems, IBA Group and Intetics Co. Today Belarusian companies working within the High-Tech Park, differ by the progressive management and the effectiveness of marketing decisions. Significant amounts of money can be profitably invested in the projects of the IT-sphere of Belarus. Major foreign investors in the Belarusian IT-sphere are companies from USA, Great Britain, Israel, Germany and Russia. The residents of HTP are exempt from taxes, duties and other mandatory payments to the republican budget. Information and communication technologies are also in the priority areas, which will attract investments. The number of companies in Belarus, producing intelligent products which are in demand around the world, is growing rapidly. The massively multiplayer online game World of Tanks, developed by the Belarusian studio Wargaming.net. The main advantages of Belarusian programmers are: the company allocates the capacity to think and act not by the book, but to find nontrivial solutions.

The history of information technology in Belarus goes back decades. Belarus, the HTP and its resident companies rank high on the global and regional rankings assessing the IT achievements. Software from Belarus often makes headlines in the IT world. Belarus is one of the world’s major exporters of IT services per capita. Belarusian IT companies sell mostly internationally. Six HTP resident companies were included in the list of the best outsourcing service providers. Belarusian companies provide IT services to the world’s biggest corporations and organizations. Mobile applications developed by resident companies of the Belarusian Hi-Tech Park are used by more than a billion people in more than 190 countries of the world. Belarus has set out to develop the IT industry and to promote digital transformation of the economy. IT specialists are trained in 21 universities across the country.

**7. Information Systems and Technologies, types of computer, positive and negative impact of IT**

Information technology (IT) is the use of computers to store, study, retrieve, transmit and process data or information, often in a business or other enterprise. IT effect as a subset of information and communication technologies (ICT).

The term "IT" is often used synonymously with computers and computer networks, but it also corresponds to other information dissemination technologies such as television and telephony. Some impacts are related to information technology, including hardware, software, electronics, semiconductors, the Internet, telecommunications equipment, and e-commerce.

Information systems (IS) are broader concepts that include IT. IT influence with technologies involved in personal life.

If say about types of computers, I can mention these:

Personal computer (PC) - A computer for personal use by one person, usually with Windows functionality.

Desktop (desktop) - a PC computer, not intended to be portable, installed in a permanent location.

A laptop (laptop) is a portable computer that is combined in a compact case with a display, keyboard, pointing device, processor, memory and hard drive.

A tablet computer is an ultra-portable computer, smaller than laptop headphones, with a touch-sensitive earpiece.

A smartphone is a palm-sized portable computer with text and voice communication capabilities.

A workstation is a modern desktop computer for specialized tasks such as 3D graphics or development.

Server is a computer that is conservative for providing services to other computers on the network.

A supercomputer is an exceptionally powerful and expensive computer needed to solve the most complex computing problems.

Wearables are the latest trend where computer applications are integrated into watches, phones, glasses and clothing

**8. Computer Essentials**

A computer is a complex machine capable of performing enormous numbers of calculations at incredible speed. Although human intelligence is undoubtedly superior, the capabilities of the computer should still not be underestimated.

Main computer components:

**Central processing unit (CPU)** is an electronic circuit that runs computer programs. The processor's operation consists of four main steps:

Retrieving a command from memory (fetch)

Decoding a command (decode)

Executing an operation (execute)

Writing the result back to memory (writeback)

**Motherboard** - contains connectors for installing a processor, slots for RAM, a chipset that provides communication between the processor and peripheral devices, as well as chips with firmware for booting the system.

**Hard drive** is a device for storing data. It is one or more magnetic disks on which information is written and read. Allows you to store from 120 GB to hundreds of TB of data.

**Computer memory:**

Random access memory (RAM) - volatile, fast memory for temporary data storage

Processor registers are the fastest form of memory used directly by the processor

Read-only memory (ROM) - stores the computer's main boot programs

Additional media - flash memory, magnetic tapes, punched cards

Monitor is an output device that displays text and graphic information.

A keyboard is an input device that has keys corresponding to characters. Contains a built-in processor and circuits for processing keystrokes.

A mouse is a pointing device that converts hand movements into signals for the computer. There are mechanical, optomechanical and optical.

**9. The development of computers(generations). Artificial Intelligence**

The development of computers is often divided into six generations, each of which is characterized by a major technological advance that radically changes the way computers work.

**First generation:** Vacuum tube computers. They were huge, took up entire rooms, were expensive to operate, consumed a lot of electricity and got very hot, which often led to breakdowns. They worked only in machine language and could only solve one problem at a time.

**Second generation:** transistor computers. Transistors replaced vacuum tubes, making computers smaller, faster, cheaper, more energy efficient, and more reliable. Symbolic/assembly languages began to be used and the development of high-level languages such as COBOL and FORTRAN began.

**Third generation:** integrated circuit computers. Transistors were miniaturized and placed on silicon chips, greatly increasing the speed and efficiency of computers. Users began to interact with computers through a keyboard and monitor, rather than using punch cards and printouts. Operating systems have appeared that allow you to run many applications simultaneously.

**Fourth generation:** microprocessor-based computers. Thousands of integrated circuits were placed on a single silicon chip, allowing the creation of powerful palm-sized computers. The programming languages C, C++ and DBMS appeared. Networks and CD-ROM, graphical user interface and mouse were developed.

**Fifth generation:** computers based on artificial intelligence. They use parallel processing and superconductors to implement AI. Object-oriented languages such as C++ and Java appeared. These computers are smaller, faster and more portable than previous generations, and can handle many tasks simultaneously.

**Sixth generation:** “smart” computers based on AI and “artificial brain”. They are capable of speech recognition, solving complex problems and imitating human intelligence.

In the future, it is possible to create computers based on neural networks, DNA and other biotechnological that will reach the level of human intelligence. Computers can become an integral part of all the devices around us - from refrigerators to cars and even light bulbs.

**Artificial Intelligence** (AI) is the field of computer science that aims to create intelligent machines that can perform tasks that typically require human intelligence, such as visual perception, speech recognition, decision-making, and language translation. The fundamental goal of AI is to develop computer systems that can think, learn, and act in a human-like manner.

The core components of AI include:

Natural Language Processing (NLP) - the ability of machines to analyze, understand, and generate human language, allowing for natural communication between humans and machines.

Knowledge Representation - the ability to store information and relationships in a way that can be readily used for reasoning and problem-solving.

Automated Reasoning - the ability to use the stored information to answer questions, draw new conclusions, and make decisions.

Machine Learning - the ability of machines to learn and improve from experience without being explicitly programmed, allowing them to adapt and perform tasks more effectively over time.

There are different levels of AI development:

Narrow AI (or Artificial Narrow Intelligence) - AI systems designed to perform a specific task or a limited set of tasks, such as playing chess or recognizing images.

Artificial General Intelligence (AGI) - a hypothetical form of AI that would have human-level cognitive abilities across a wide range of domains, such as language understanding, problem-solving, and creativity.

Artificial Superintelligence (ASI) - a theoretical level of AI that would surpass human intelligence and capabilities in all areas.

Current AI systems are primarily in the narrow AI category, excelling at specific tasks like playing chess or driving cars. The development of AGI and ASI remains a significant challenge and is the subject of ongoing research and debate.

The key AI techniques used to create these intelligent systems include machine learning (e.g., deep learning), neural networks, computer vision, and natural language processing. These technologies allow AI systems to learn from data, recognize patterns, and make decisions in ways that mimic and even surpass human intelligence.

As AI continues to evolve, it is poised to have a profound impact on a wide range of industries, from healthcare and transportation to finance and entertainment. However, the development of advanced AI also raises important ethical and societal considerations that need to be carefully addressed.

**10. Computer networks and Network Topology; LAN, WAN, MAN and etc.**

A computer network is a system of connected computers, peripherals, and communications that can exchange data and share resources. If the network is limited to one building or group of buildings, it is called a local area network (LAN). Computers on a LAN can be connected directly or through a hub or switch.

A wide area network (WAN) covers a much larger geographic area than a LAN. The largest WAN is the Internet, a global network of interconnected computers and local area networks.

You can share printers, programs, files, and an Internet connection on a network. Network files can be easily backed up. The network also provides greater security because there is centralized control over user access.

There are three main network topologies: ring, linear (bus), and star. They differ in the way the devices are physically connected.

**Ring topology:**

Typical peer-to-peer network

The devices are connected in series in a circle, data is transmitted along the ring in one direction using a special “marker” signal

**Advantages:** resistance to adding new devices and high load, relatively inexpensive

**Disadvantages:** slower than a star topology, failure of one device or cable disrupts the entire network

**Bus topology:**

Also a typical peer-to-peer network

The devices are connected to the main cable via special T-connectors

**Advantages:** ease of installation and expansion, flexibility, fault tolerance

**Disadvantages:** restrictions on cable length, decrease in performance as the number of devices increases

**Star topology:**

Typical client-server network

The central server is connected to other devices through a switch or hub

**Pros:** High reliability, easy to add devices, better performance

**Disadvantages:** more expensive, failure of central equipment disrupts all work

**11. Internet. WWW**

The Internet is a huge global network that connects millions of computers, consisting of cables, routers and computers, which allows digital data to be transferred between these devices. The countries with the largest number of Internet users are China, USA and India.

Initially, people used the Internet mainly to search for information. Today, the Internet allows many people to communicate, work, study and have fun.

In order for computers to communicate on the Internet, they use a common language called TCP/IP (Transmission Control Protocol / Internet Protocol). Each connected computer has a unique IP address by which it can be identified on the network.

The World Wide Web is one of the main components of the Internet. It is an online information system that allows you to access interconnected web pages using hyperlinks. Most Internet services today are integrated into the Web.

Unlike the physical Internet, the World Wide Web is a virtual network of websites hosted on servers connected to the Internet. To access the Websites, web browsers are used, which interpret the HTML code of the pages and display it on the screen.

Web browsers also allow you to access other Internet services, such as instant messaging, file transfer (FTP), or video conferencing.

As the Web evolved, developers began to use more sophisticated tools such as CSS and the programming languages JavaScript and PHP to create dynamic web pages.

**12. Software: classes and types. Programming languages**

Computer software is a general term used to describe a collection of computer programs, procedures and documentation that perform some tasks on a computer system. Software includes websites, programs, video games, etc. that are coded by programming languages like C, C++, etc. The term “software” is sometimes used in a broader context to mean anything which is not hardware but which is used with hardware.

In computers, software is loaded into RAM and executed in the CPU. Once the software is loaded, the computer is able to execute the software. Each instruction causes the computer to carry out an operation – moving data, carrying out a computation, or altering the control flow of instructions. Software is usually written in high-level programming languages. A software is a collection of programs that help one to communicate with the hardware of the computer. There are different classes of computer software which are useful for several purposes.

System Software coordinates the complete system hardware and provides an environment or platform for all the other types of software to work in. It is the most basic type of software in any computer system, which is essential for other programs, applications and indeed for the whole computer system to function.

Application Software comprises those programs that help the user perform tasks of his/ her choice. They are non-essential software which are installed and run depending upon the requirements, in the environment provided by the system software.

Programming software is used to write, test, debug, and develop other software programs and applications. They are used for creating both the system as well as application software.

Programming software is used by software programmers as translator programs. They are facilitator software used to translate programming languages into machine language code. Translators can be compilers, interpreters and assemblers. You can understand compilers as programs that translate the whole source code into machine code and execute it. Interpreters run the source code as the program is run line by line. And assemblers translate the basic computer instructions – assembly code – into machine code.

Different programming language editors, debuggers, compilers and Integrated Development Environments (IDE) are examples of programming software.

There are five additional subcategories of software. These are: Freeware; Shareware; Open Source Software; Closed Source Software; Utility Software.

Freeware software is any software that is available to use for free. They can be downloaded and installed over the internet without any cost. Although they all fall under the category of Application or end-user software, they can further be categorized as freeware because they are free for you to use.

Shareware, on the other hand, are software applications that are paid programs, but are made available for free for a limited period of time known as ‘trial period’. You can use the software without any charges for the trial period but you will be asked to purchase it for use after the trial ends. Shareware allows you to test drive the software before you actually invest in purchasing it.

Open Source Software is a type of software that has an open-source code that is available to use for all users. It can be modified and shared with anyone for any purpose.

Closed Source Software. These are the types of software that are non-free for the programmers. For this software, the source code is the intellectual property of software publishers. It is also called ‘proprietary software’ since only the original authors can copy, modify and share the software.

Utility software is considered a subgroup of system software. They manage the performance of your hardware and application software installed on your computer, to ensure they work optimally. Some features of utility software include: Antivirus and security software; File compressor; Disk cleaner; Disk defragmentation software; Data backup software.

Programming is the process of creating computer programs, scripts, and other sets of instructions that a computer can execute. There are many different programming languages, each with its own syntactic structure.

Programming languages can be divided into several categories:

By level of abstraction:

High-level languages (the most common) - they are more abstract and closer to human language.

Low-level languages are closer to machine code, closer to the computer hardware.

According to the programming paradigm:

Declarative - describe what needs to be done.

Imperative/procedural - describe how it should be done.

Object-oriented - based on the concept of objects.

Parallel - supports the execution of several tasks simultaneously.

By purpose:

General purpose - can be used to solve a wide range of problems.

Subject-oriented - designed to solve specific problems in a specific area.

By way of execution:

Interpreted - executed using an interpreter.

Compiled - first compiled into machine code, then executed.

Script - executed through an interpreter.

The following languages are recommended for creating programs, games and applications: C, C#, C++, Java, Swift, Visual Basic.

For the development of artificial intelligence systems: AIML, C, C#, C++, Prolog, Python.

For working with databases: DBASE, FoxPro, MySQL, SQL, Visual FoxPro.

For game development: C, C#, C++, DarkBASIC, Java.

To create drivers and software interfaces for hardware: Assembly, C.

For developing web pages and Internet applications: HDML, HTML, Java, JavaScript, Perl, PHP, Python, XML.

Python is a dynamic, general-purpose, object-oriented language widely used in various fields.

Java is an object-oriented language often used to develop web applications, video games, and mobile applications.

Ruby is an object-oriented scripting language used in web development, robotics and other fields.

HTML is the standard markup language for creating web pages.

JavaScript is a client-side programming language used to create interactive web pages.

C is a structure-oriented, mid-low-level language used in systems programming, embedded systems, and game development.

C++ is an extension of the C language that supports an object-oriented approach.

C# is a multi-paradigm programming language used for developing Windows applications and web services.

PHP is a scripting language for creating dynamic web pages.

SQL is a query language for managing database content.

**13. Operating systems**

An Operating System (OS) is a powerful program that manages and controls the software and hardware on a computing device so as to make the device behave in a predictable but flexible way. An OS acts an interface between a user and a device. Thus, in general sense, an OS is that software which helps a user to run other applications on his computing device.

The OS performs multiple functions and management. It manages computer’s hardware resources by performing required services:

It manages Input and Output devices such as a mouse, keyboard, display monitors, scanners and printers; it manages network devices such as routers, modems and network connections; it manages storage devices, both internal and external drives.

Also it manages the allocation of internal memory between multiple applications. It helps in performing batch jobs for example, printing etc. Depending on the capability of devices that can offer parallel processing, a program is managed by OS such that it can run on more than one processor at a time.

The functions of an OS include: Memory Management. Device Management. Processor Management. File Management. Controls System Performance. Security. Error Detection. Coordination among Software and Users. Job accounting.

**Memory Management**. One of the main functions of OS is to manage the primary and secondary memory. It decides and checks which process will obtain memory and at what time.

**Device Management**. It decides which process will get the device, when and for how long. It allocates and deallocates the device efficiently.

**Processor Management**. In a multi-programming environment, it is OS which decides which process will get the processor when and for how long.

**File Management**. It decides who will get the resources.

**Controls System Performance.** An OS records delays between a request and response of the system.

**Security.** An OS by using password and other similar techniques prevents and checks unauthorized users to access the data and program.

**Error Detection.** By using various error detecting aids an operating system helps in prevention of errors.

**Coordination among Software and Users**. It Coordinates and assigns compilers, assemblers, interpreters and other software to users.

**Job accounting.** It keeps a track of resources and jobs used by different users all the time.

**Types of Operating Systems**

The broad family of operating systems can be categorized in to four types based on their controlling and supporting systems. These types of Operating System are: Real Time Operating System (RTOS); Single User Single Task OS; Single User Multi Tasking OS; Multi User OS.

**14. Computers Viruses and Computer Security**

A computer virus is a malware program that is written intentionally to gain access to a computer without its owner’s permission. These kinds of programs are primarily written to steal or destroy computer data.

There are different types of computer viruses that can be categorized according to their origin, spreading capabilities, storage location, files they infect and destructive nature.

**1. Boot Sector Virus**. Boot Sector virus infects the storage device’s master boot record (MBR). It then gets into the main memory once the computer restarts. Modern operating systems come with an inbuilt boot sector safeguard. The virus can affect any file after getting into the main memory.Make sure that the disk you are using is write-protected.

**2. Direct Action Virus.** This virus quickly gets into the main memory, infects all programs/files/folder defined in Autoexec.bat path and then deletes itself. It can also destroy the data present in hard disk or USB attached to the computer. While these viruses are found in hard disk’s root directory, they are capable of changing location on every execution. Use antivirus scanner.

**3. Overwrite Virus.** Overwrite viruses are very dangerous. They simply delete the data (partially or completely) and replace the old code with their own. They replace the file content without changing its size. The only way to get rid of this virus is to delete all the infected files.

**4. Web Scripting Virus.** A web scripting virus breaches web browser security and allows attackers to inject client-side scripting into the web page. It can affect any web page by injecting hidden code in header, footer or root access file. Use malicious software removal tool in Windows.

**5. Directory Virus.** Directory Virus infects the file by changing the DOS directory information. It becomes very difficult to locate the original file after getting infected. Install the antivirus to relocate the misplaced files.

**6. Polymorphic Virus.** The polymorphic virus encodes themselves using different encryption keys and algorithms each time they infect a program or create a copy of itself. In other words, it is a self-encrypted virus which is designed to avoid detection by scanners. Install advanced, high-end antivirus software.

**7. Memory Resident Virus.** These viruses live in primary memory (RAM) and get activated whenever you switch on the computer. They affect all files currently running on the desktop. It can affect any file running on PC and files that are being copied or renamed. Install strong antivirus software.

**8. Macro Virus.** This virus is written in the macro language, so it may run automatically when the document is opened and it can easily spread to other files too. Disable macros and don’t open emails from unknown sources. Alternatively, you can install modern antivirus software that can detect macro virus easily.

**9. Companion Virus.** Unlike traditional viruses, they do not modify the existing file. It creates a copy of a file with a different extension (usually .com) which runs in parallel with the actual program. It can perform malicious steps such as deleting the original files. Install reliable antivirus software and avoid downloading attachments of unsolicited emails.

**10. Multipartite virus.** Once it gets into the system, it infects all drives by altering applications’ content. Clean boot sector and entire disk before reloading the data. Do not open attachments from a non-trusted internet source and install quality antivirus software.

**11. FAT Virus.** A FAT virus alters the index and makes it impossible for the computer to allocate the file. It is powerful enough to force you to format the whole disk. It can affect any file. Avoid downloading files from non-trusted sources. Use robust antivirus software.

**12. Trojan Horse.** Users are typically tricked into loading and executing it on the system. It can destroy/modify all the files, crash the computer, modify the registry, and is strong enough to give hackers remote access to your PC. Use reliable high-end antivirus software and update it regularly.

**13.Computer worms.** Worm is a standalone malware program that replicates itself in order to spread to other computers. Unlike viruses, it overloads the network by replicating or sending too much data, forcing the hosts to shut down the server. Use antivirus and anti-spyware software.

1. **Stage in the application process for a job. Mind map, transferable skills**

I will explain the most important stages your application will be going through in the HR department. This way, you’ll be even better prepared in the competition for your dream job.

1. Receiving your application documents. Email applications should not be too big and documents should not be sent individually or in a confusing jumble.
2. Pre-selection. Pre-selection means filtering out the candidates that do not fulfil the basic criteria.
3. Document evaluation. Your CV and your cover letter are analyzed before and after a job interview and should complement each other. The CV should be clearly laid out and not be too lengthy. Your cover letter should conform to the usual layout criteria. You should reveal a little of your personality in your cover letter.
4. The short list. Your documents might only be read by the people who make the final decision if you make it onto the short list. Only a few will make it onto the short list and be invited for interview.
5. Assessment, job interview or telephone interview. The next round will involve a personality test, telephone interview, online assessment or a face-to-face job interview. You can take it for granted that all the other candidates are just as well qualified as you are.
6. After the job interview. After the job interview, you should make a note of the most important issues and then relax.

**Help identifying your skills.** Employers will look for two different types of skills. 1. Soft skills (also called transferable skills are the type you pick up through life experience, like communication).

1. Hard skills (necessary skills for specific jobs and they are gained through work, learning or training). To help you identify your current skills, you could:

•think about your current situation – what job or experiences have you had and what skills did they include;

•talk to people who know you well personally – an outsider's perspective can help identify what skills you have;

•write down a list of strengths and areas you’d like to improve.

**How to improve your skill set.** Improving your skills set can help you develop your CV and may help you decide on what career path you want to take in the future. You may find skill areas you need to improve and find new training opportunities to update your qualifications.

**Set realistic goals.** You should be realistic when setting yourself goals and deciding your next steps. You should focus on a job or qualification, which is available and accessible to you and your skill level. You can gain new skills by: doing some work experience; taking part in courses and training opportunities; volunteering. Taking a course does not have to be a full-time commitment.

**Be flexible with your career plan.** Develop your plan with a long-term aim and short-term goals so you can break up your time. You should bear in mind that you’re volunteering and work experience opportunities may not always be the exact role you want to undertake.

**Update your CV with new skills.** The benefits of taking volunteering and training opportunities are that they can: fill a gap on your CV; prove to an employer you are keen to learn and develop new skills; show educational providers that you want to learn more; help you develop skills that are relevant to your job choice and make your CV stand out.

1. **CV, Personal Statement, Cover Letter**

Assessing your strengths and weaknesses as an early career researcher could be key to your longer-term development. Ask yourself questions like: What areas are you most inspired by or interested in? What scares you? And, finally, ask yourself why and look at possible ways of changing your perceptions of a competency. Trying to come at things from a different angle is often refreshing and valuable. It’s vital not to attach too much negativity to your weaknesses. Through some self-awareness, you should be able to start acknowledging how some of your weaknesses can also be deemed a positive thing. Equally, if you are a passionate and spontaneous person, this could be both a positive and negative character trait depending on the context. By being aware of our weaknesses and by repositioning them we may begin to see that they should not be always seen in a negative light.A resume consists of several key components, and to write a good resume you need to cover all these aspects. The main items that are required on a resume include your name, contact details (address, telephone and optionally email), your objective, education, previous work experience and references. You may also include other additional information that may be relevant to the job you are applying for such as special interests, computer knowledge, and if you are multilingual, you may write down the languages that you speak.

**Name and contact details.** It is important to put your real name on your resume, and not a nickname. This is to show that you are serious about the position you are applying for.

**Objective.** The objective should be a simple sentence or two that is directly related to what work you wish to gain and your qualifications or accomplishments.

**Education.** This is often one of the most important areas when writing a resume. It is important to list all the education you have achieved. If you have a degree, be sure to include the type of degree you achieved, your majors, the institution attended, graduation date and years attended.

**Work Experience.** Work experience is also another very highly important category when writing a resume. It shows employers if you have had relevant past experience to the job you are applying for. You should describe the work you done. You should list any forms of volunteer work or internships.

**Additional Information.** This is the area in which you can list anything else that may be relevant, or put you ahead of other applicants.

**References.** It is almost essential to include a reference list when writing a resume. References are most often people you have previously worked for, or if you haven't had a job before you could list teachers or family friends.Your CV and your cover letter are analyzed before and after a job interview and should complement each other. The CV should be clearly laid out and not be too lengthy. Your cover letter should conform to the usual layout criteria. You should reveal a little of your personality in your cover letter.

1. **Common interview questions. Advanced interview techniques: talking about your strength and weaknesses, asking questions of your own.**

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**Help identifying your skills.** Employers will look for two different types of skills. Soft skills (also called transferable skills are the type you pick up through life experience, like communication).

Hard skills (necessary skills for specific jobs and they are gained through work, learning or training). To help you identify your current skills, you could:

•think about your current situation – what job or experiences have you had and what skills did they include;

•talk to people who know you well personally – an outsider's perspective can help identify what skills you have;

•write down a list of strengths and areas you’d like to improve.

**How to improve your skill set.** Improving your skills set can help you develop your CV and may help you decide on what career path you want to take in the future. You may find skill areas you need to improve and find new training opportunities to update your qualifications.

**Set realistic goals.** You should be realistic when setting yourself goals and deciding your next steps. You should focus on a job or qualification, which is available and accessible to you and your skill level. You can gain new skills by: doing some work experience; taking part in courses and training opportunities; volunteering. Taking a course does not have to be a full-time commitment.

**Be flexible with your career plan.** Develop your plan with a long-term aim and short-term goals so you can break up your time. You should bear in mind that you’re volunteering and work experience opportunities may not always be the exact role you want to undertake.

**Update your CV with new skills.** The benefits of taking volunteering and training opportunities are that they can: fill a gap on your CV; prove to an employer you are keen to learn and develop new skills; show educational providers that you want to learn more; help you develop skills that are relevant to your job choice and make your CV stand out.Employers conduct different types of job interviews, such as behavioral interviews, case interviews, group interviews, phone and video interviews, online interviews, second interviews, and even interviews held during a meal.

**Video Interview.** Perhaps you’ve applied for a remote job or you’re interviewing for a position in another state (or country). Software programs such as Skype, Zoom, and FaceTime making video calling easy and video interviews are becoming more common.

**Exit Interview.** An exit interview is a meeting between an employee who has resigned or been terminated and the company’s Human Resources department. Companies conduct these types of interviews, so they can learn more about the work environment and get job feedback.

**Off-Site Interview.** Employers sometimes schedule job interviews in a public place, like a coffee shop or restaurant.

**On the Spot Interview**. Sometimes you’ll be expected to do an on-the-spot interview. You may turn in your application and be asked to do an interview right away.

**Panel Job Interview**. A panel job interview takes place when you’re interviewed by a panel of interviewers.

**Final Interview.** The final interview is the last step in the interview process and the last interview you find out whether or not you’ll get a job offer.

**Group Interview.** Employers may hold group interviews because they’re often more efficient than one-on-one interviews. There are two types of group interviews: one involves an applicant being interviewed by a group (or panel) of interviewers; the other involves one interviewer and a group of applicants.

**Informal Interview.** Hiring managers may begin the screening process with a relaxed, informal conversation instead of a formal interview.

**Informational Interview.** An informational interview is used to collect information about a job, career field, industry or company.

**Mock Interview**. A mock interview provides you with an opportunity to practice for an interview and receive feedback.

**Competency Based Interview.** Interviews, that require you to give examples of specific skills. The interviewer will ask questions that will help them determine if you have the knowledge and skills required for the specific job.

**Phone Interview.** It’s good to be ready and prepared to ask phone interview questions to ask the interviewer as well.

**Restaurant Interview.** One of the reasons employers take job candidates out to lunch or dinner is to evaluate their social skills and to see if they can handle themselves gracefully under pressure.

In the days before your job interview, set aside time to do the following:1. Start by researching the company and your interviewers. Understanding key information about the company you’re interviewing with can help you go into your interview with confidence. 2. Practice your answers to common interview questions. Prepare your answer to the common question. 3. Reread the job description. Think about examples from your past and current work that align with these requirements.4. Use the STAR method in answering questions.5. Recruit a friend to practice answering questions. Actually, practicing your answers out loud is an incredibly effective way to prepare.6. Prepare a list of references. Having a reference list prepared ahead of time can help you quickly complete this step to move forward in the hiring process.7. Be prepared with examples of your work. During the interview, you will likely be asked about specific work you’ve completed in relation to the position. 8. Prepare smart questions for your interviewers. 9. Plan your interview attire the night before. 10. Bring copies of your resume, a notebook and pen. 11. Plan your schedule so that you can arrive 10–15 minutes early. 12. Make a great first impression. Don’t forget the little things.13. Treat everyone you encounter with respect. 14. Practice good manners and body language.15. Win them over with your authenticity and positivity. 16. Respond truthfully to the questions asked. 17. Tie your answers back to your skills and accomplishments. 18. Keep your answers concise and focused. 19. Do not speak negatively about your previous employers. 20. Ask about next steps. 21. Send a personalized thank you letter after the interview.