//---------------------3D PRINTING PRESENTATION---------------------//

Today, my presentation’s topic is 3d printing.

//---------------------INTRODUCTION ---------------------//

And these are topics of my slides. Ok, so im starting.

Firstly, what is 3D printing? 3D printing is a manufacturing way that allows you to create three dimensional objects from digital designs. That means, you can create what you want. Your imagination is the only limit. Unlike traditional manufacturing ways, 3D printers build objects layer by layer. As you can see in the picture.

//---------------------HOW 3D PRINTERS WORK---------------------//

How 3D printers work? 3D printers have a hot end that called nozzle. These layers came from there. The material melts and flows from nozzle. 3D printer moves the location of nozzle and 3D print cames off like that. So the main purpose of 3D printers are locating the nozzle according to instructions from the digital model. For locating the nozzle, there are 3 main motors for x,y,z axises. And one more for pushing the material from the nozzle. This pushing mechanism called extruder. And the layers build on a plate which called “print bed”. And there is a computer for controlling the location of nozzle.

//---------------------HOW 3D PRINTINGWORK---------------------//

And then we came to how 3D printing works. The survey of the model. First for printing the model you have to have a digital design that what you want to print.

And than you have to slice the model. With slicing the 3d model, you can adjust quality of the print, or the heat of nozzle for different materials or you can reduce or increase speed of the printer for more accurate results. With slicing programs you can get a file which 3d printers controller computer can understand. These files called “gcodes”.

After 3D print is done if you want you can sand for more smooth surface or dye what colour you want.

//-----------------------MATERIALS USED IN 3D PRINTİNG-----------//

One of the remarkable aspects of 3D printing is the wide range of materials it can work with. From plastics and metals to ceramics and even food, the possibilities are virtually limitless. Some of the most common materials used in 3D printing is listed there.

**Plastics:** There are too many types of plastics that are using in 3D printing. PLA, ABS or PETG can be an example for that. For prototyping, plastic is very good. Because of its stability and its low costs.

**Metals:** Aluminum, titanium, stainless steel, and even precious metals like gold and silver can be 3D printed, making it suitable for industries like aerospace or automotive.

**Ceriamics:** Ceramic materials are used in the production of intricate objects like dental implants and artistic sculptures.

**Composites:** These materials combine different elements, such as carbon fiber or glass fiber, to achieve enhanced strength and durability.

//----------------------- APPLICATIONS OF 3D PRINTING-----------//

There are too many applications that 3D printing can be used. Some of them are listed.

Prototyping: 3D printing allows to see or test the products before producing. So if there is any problems with it producer can easily change that before the final version. For instance in my rocket team, we are using 3D printed prototypes for testing our designs.

Healthcare: With 3D printing some human organs, tissues or prosthetics can be printed and used for replacing non-functioning organs.

Automotive and Aerospace: 3D printing can be used for producing lightweight components, improve fuel efficiency, and streamline manufacturing processes.

Architecture and Construction: It allows the creation of complex architectural models, customized building components, and even entire houses.

//----------------------- ADVANTAGES OF 3D PRINTING-----------//

There are so many advantages of 3D printers. Here are some of them:

Design Flexibility: Complex designs or intricate designs can be easily produced thanks to 3D printers.

Cost Efficiency – Easy manufacturing: 3D printing eliminates the need for tools or machines for manufacturing things. That makes small products low costed and everyone can produce things. In this picture you can see my tank and fighter series. All of them was made with a 3D printer. Without 3D printer its impossible to produce these models in my home.

Rapid Protoyping: As I touched before, 3D printers allow to users to prototype their ideas and test them.

Customization: Personalized products can be produced very easily with individual needs and preferecences thanks to 3D printers.

//-----------------------CHALLENGES & LIMITATIONS OF 3D PRINTING -----------//

3D printing printing hold enormous potential, but there are sine challenges and limitations.

The first challenge is the speed. 3D printers works very slowly and that causes to small number of prints and high wait times.

Size and Scale: The scale of 3D printer is not that big, the biggest printers have printing area about fourty to fourty. And for some prints these dimensions are not enough.

Material Limitation: Not all materials are suitable for 3D printing for example wood. But today, filament producers started to fake materials like plastic which can imitate wood.

Quality and Durability: Some 3D printed objects may not possess the same level of strength and durability as traditionally manufactured items.

Intellectual Property and Legal Issues: 3D printing raises concerns about copyright infringement and the unauthorized production of patented items. Or maybe illegal items like guns or pistols.

//-------------------------------FUTURE OF 3D PRINTING**-----------------------///**

3D has very big potentional. Like fifteen years ago 3D printing is a very high tech that only a few people can axcess. But today 3D printers comed to our homes and they are usable and reachable for everyone.

Advancements in Materials: Researchers are continuously exploring new materials, such as biocompatible materials for medical applications and conductive materials for electronics.

Large-Scale Printing: As you can see there are a lambo that 3D printed from a 3D printer. Maybe in to the future, we can 3D print and drive our cars. Who knows?