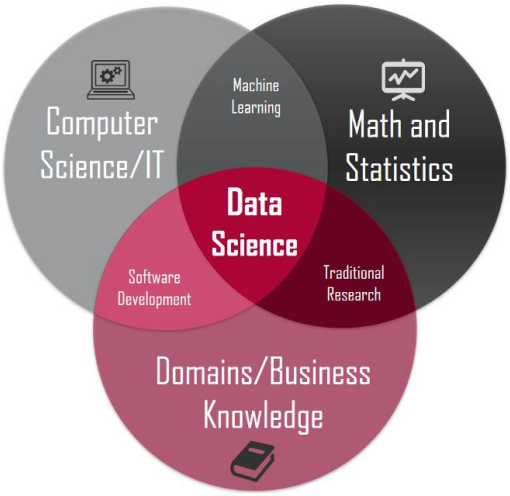
# Computer Science Preparation – M5 – T1 Midterm

## Valuable information:

**Information** is data that has meaning and is useful.

**Data** are raw facts, numbers, words, images and sounds that have no meaning.

Worldwide, every user makes data and information, some of that data is of **great value** and some is **useless.** Because of that, we have something called **data science,** which helps users to understand the meaning and importance of data and at the same time, users will gain knowledge from the information that the **data science processed.**




**Data science** uses **data** to find patterns and make smart decisions

**Data visualization** is used to make it easier for the users to understand the information and gain knowledge from it.

## Information age:

**Data** and **information** are something that is extremely important. It is used in various fields such as **economy, education, public health, environment, agriculture** and **transportation.** Today the information is stored in a digital way instead of on paper because it is more **efficient** and **safer.** The **development** of the **Internet** and **digital communication, access to data became available anywhere and at any time.**

**Benefits of Digital World:**

- Faster Communication
- Easy Learning
- Online Shopping
- Navigation
- Entertainment

**Dangers of Digital World:**

- Fake News
- Internet Addiction
- Cyberbullying
- Scams
- Privacy Issues

## Data Science Process:

Data science is a process that helps us understand data and take actions.
There are seven important steps in data science:

| Data Science Step | Simple Definition |
|---|---|
| **1. Ask a Question** | Decide what problem you want to understand or solve. |
| **2. Collect Data** | Gather information that can help answer the question. |
| **3. Check and Prepare Data** | Check if the data is correct, complete, and ready to use. |
| **4. Explore Patterns** | Look at the data to find high points, low points, changes, or repeated trends. |
| **5. Explain the Meaning** | Describe what the pattern may mean using evidence from the data. |
| **6. Present the Results** | Share the findings clearly using graphs, tables, dashboards, or reports. |
| **7. Make a Decision** | Use the results to choose a smart action or solution. |

**GIGO – Garbage In, Garbage Out** – if our data is bad, our result will also be bad

## Design thinking:

When we are designing something it is important that the design is easy to use for everyone. When we are presenting the information and the design we need to make sure our users or customers will have a benefit from it, because if they do not benefit from they will not be interested in our product or service which will be bad for us.

**Design Thinking** is a process for solving problems with users in mind.
It helps us understand users, define real problems, create ideas, test solutions and improve designs.

We need to **clearly understand users needs** in order to design a product or service that the users will benefit from.

### Design Thinking Process:

| | |
|---|---|
| **1. Empathize** | Understand the user, their needs, and their problems. |
| **2. Define the Problem** | Write the user`s problem clearly so you know what to solve. |
| **3. Brainstorm** | Think of many possible ideas before choosing one solution. |
| **4. Prototype** | Create a simple model or sketch of the solution. |
| **5. Test with Users** | Let users try the prototype and give feedback. |
| **6. Improve the Design** | Use feedback to make the solution better. |