



## Assignment – 01

Name: **Mahidul Islam**

Email: [mahidul2islam1@gmail.com](mailto:mahidul2islam1@gmail.com)

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### **Short Questions and Answer:**

1. What Data Science?

Ans: Data science is an interdisciplinary field that uses scientific methods, processes, algorithms and systems to extract or extrapolate knowledge and insights from noisy, structured and unstructured data, and apply knowledge from data across a broad range of application domains.

Source: [https://en.wikipedia.org/wiki/Data\\_science](https://en.wikipedia.org/wiki/Data_science)

2. What Artificial Intelligence?

Ans: Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems. This technology makes their own decision by some algorithm without human.

### 3. What is Machine Learning?

Ans: If we consider programming as automation, then Machine Learning is a system to automate the process of that automation.

Source: Rakibul Hasan Sir

### 4. Future of Data Science and Real Life Applications.

Ans: Data science plays a significant role in almost every sector, like internet searching, online business, e-commerce, marketing, healthcare, entertainment, airlines planning, logistics, finance industries, gaming, and almost all sectors & industries in real life.

Source: <https://www.knowledgehut.com/blog/data-science/top-data-science-applications-for-future>

### 5. Why Python is so popular? Future of Python.

Ans: Python is Open source, high level programming Language. Anyone can develop this programming language. It's also like as a human language. So, there are so many reason for Python is so popular.

Future of python is very bright. Now it's using in Data Science, ML, NLP, AI and so on. It's community very much stronger than other language.

## 6. Why Python for data analytics?

Ans: Python provides libraries for graphics and data visualization to build plots. It has a vast collection of libraries for numerical computation and data manipulation. Some Python for Data Analytics are: NumPy, Pandas, Matplotlib etc.

Source: <https://www.simplilearn.com>

## 7. Importance of Python in Machine Learning.

Ans: We know that, Python is very much suitable for Data Science and Machine Learning sector. There are many reason we can tell that, Python is the most importance for Data Science. Some of the reason are below:

- i) Easy and Fast Data Validation.
- ii) Different Libraries and Frameworks.
- iii) Code Readability.
- iv) Low-entry Barrier.
- v) Portable and Extensible.

## 8. Importance of Python in deep learning & NLP.

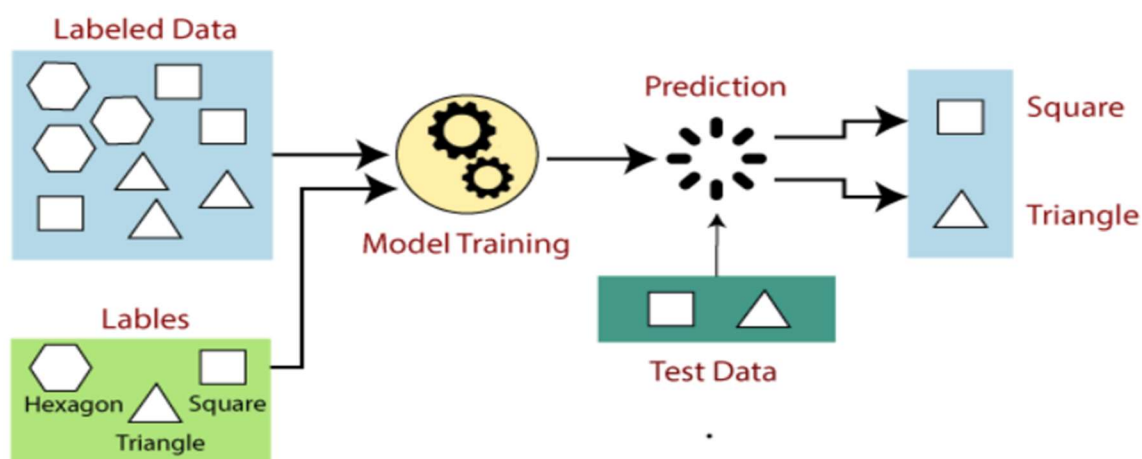
Ans: NLP is not an other element. It's a part of Deep Learning. It's also a subset of Data Science. In previous answer we can

understood that, every specific developer wants light code but work efficient. So only Python can fulfil this need. It has large community and library. Some are : TensorFlow, PyTorch, scikit-learn etc.

## 9.Supervised Learning with Examples.

Ans: Supervised learning is the types of machine learning in which machines are trained using well "labelled" training data, and on basis of that data, machines predict the output. The labelled data means some input data is already tagged with the correct output. In supervised learning, the training data provided to the machines work as the supervisor that teaches the machines to predict the output correctly. It applies the same concept as a student learns in the supervision of the teacher. Supervised learning is a process of providing input data as well as correct output data to the machine learning model. The aim of a supervised learning algorithm is to find a mapping function to map the input variable(x) with the output variable(y).

Examples:

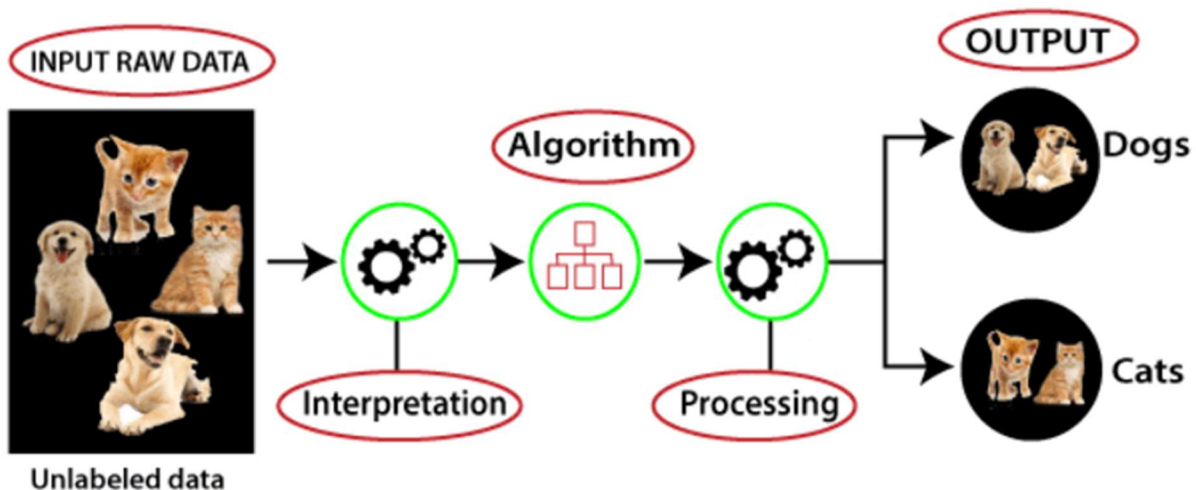


Source: <https://www.javatpoint.com/supervised-machine-learning>

## 10. Unsupervised learning with examples.

Ans: Unsupervised learning is a machine learning technique in which models are not supervised using training dataset. Instead, models itself find the hidden patterns and insights from the given data. It can be compared to learning which takes place in the human brain while learning new things. Unsupervised learning is a type of machine learning in which models are trained using unlabeled dataset and are allowed to act on that data without any supervision.

Examples:



Source: <https://www.javatpoint.com/unsupervised-machine-learning>

## **Jobs:**

11. Role and responsibilities of a Database Engineer.

Ans: i) Assist in design and development of database systems.

ii) Optimize database systems for performance and reliability.

iii) Perform database maintenance and troubleshooting activities.

iv) Test database systems and perform bug fixes.

v) Perform data back-up and archival on regular basis.

12. Role and responsibilities of a Data Analyst.

Ans: i) Managing master data, including creation, updates, and deletion.

ii) Managing users and user roles.

iii) Provide quality assurance of imported data, working with quality assurance analysts if necessary.

iv) Commissioning and decommissioning of data sets.

v) Helping develop reports and analysis.

### 13. Role and responsibilities of a Data Engineer.

Ans: i) Liaising with coworkers and clients to elucidate the requirements for each task.

ii) Conceptualizing and generating infrastructure that allows big data to be accessed and analyzed.

iii) Reformulating existing frameworks to optimize their functioning.

iv) Testing such structures to ensure that they are fit for use.

v) Preparing raw data for manipulation by data scientists.

### 14. Role and responsibilities of a Data Scientist.

Ans: i) Having meetings with team members regarding projects.

ii) Automating and integrating processes.

iii) Researching solutions to overcome data analytics challenges.

iv) Developing complex mathematical models that integrate business rules and requirements.

v) Creating machine learning models.

vi) Communicating and meeting with engineers, IT teams, and other interested parties.

vii) Sharing complex ideas verbally and visually in an understandable manner with non-technical stakeholders.

Source: <https://www.betterteam.com>

## 15. Role and responsibilities of a Machine Learning Engineer.

Ans: i) Consulting with managers to determine and refine machine learning objectives.

ii) Designing machine learning systems and self-running artificial intelligence (AI) software to automate predictive models.

iii) Transforming data science prototypes and applying appropriate ML algorithms and tools.

iv) Ensuring that algorithms generate accurate user recommendations.

v) Turning unstructured data into useful information by auto-tagging images and text-to-speech conversions.

vi) Solving complex problems with multi-layered data sets, as well as optimizing existing machine learning libraries and frameworks.

vii) Developing ML algorithms to analyze huge volumes of historical data to make predictions.

viii) Running tests, performing statistical analysis, and interpreting test results.



xi) Documenting machine learning processes.

x) Keeping abreast of developments in machine learning.

Source: <https://www.betterteam.com>