

## Morning session:

Today koushik sir started the discussion about yesterday's problem solving statements like how is the problem is solved what are all the steps we need to follow and all. Then he explained about the bridge problem .

Every problem there is a mathematical representation is there to solve the problem. In this class koushik sir explained about eulerian cycle and hamiltonian graph to solve a problem.

**Eulerian cycle:** Eulerian cycle which is similar to bridge problem where it starts and ends with the same vertex.

Visits each edge exactly once. (but vertices can be revisited).

**Hamiltonian graph:** This graph is similar to eulerian cycle in which we should cross the vertex only once and should cover all the edges and we need to come to an end where it is started.

Then he gave the problem to solve it using hamiltonian graph.

### Classes of problem:

1. have no solution
2. have multiple solution
3. trial and error

Have no solution-> In this concept if a problem that doesn't have a solution for example in a bridge crossing problem there is no solution.

Have multiple solution-> In this concept if a problem that have more than one solution. for example in hamiltonian graph problem we have multiple solution.

Trial and error-> In this concept, for a problem we can make a trial that is we can make a try in what are all the ways we can solve the problem for example in hamiltonian graph problem we can visit all the path to find the solution.

**Computing:** In general computing means calculating.

Say for an example we humans can make a computing by means if someone told us to add two numbers means first we understood the problem and store in our memory by processing and then we give the solution.

Likewise computers which take the input and move to the interface like cpu and then it gives the output in the display screen or printers.

So a computer which understands only machine language which is binary codes (0,1).

These binary codes are converted into electric signals where the data is transferred from one place to other in forms of volts.

## Afternoon session:

In this session richie told me to understand the concepts of FUNCTIONS, IF STATEMENT, and LOOPS using java and python. It makes me to understand those concepts very well and also the differences between them in both java and python.

Java:strictly follows syntax. Speed:faster Portability:can run anywhere(jvm) Popularity:widely used in big organization Typing:need to declare datatypes.	Python:minimal code,simple. Speed:slower Portability:need to install python Popularity:used in start ups,AI No need to declare datatypes.
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Then he gave me a simple task to write a program using function and calling the function both in java and python language.

Program using if statement.

Program using loops(for loop,while loop,do- while loop)

First he told me to write the codings using the GDB online debugger tool .In this tool we can write a code and run in many languages like c,c++,html,java ,python and so on.

So I wrote a codings and run in both java and python.

From this session I understood the differences between these two programming languages practically.python is simple and have minimal code when compared to java.

After this concept,he explained about what is Data,data cleaning and data preprocessing.

So **data** is information that is collected,stored.It can be a number,text,image,audios etc.

**Data cleaning** is the process of removing or clearing the incompleated data from the dataset.Also the data cleaning which improves the accuracy of the report.

**Data preprocessing** is used to check whether all the columns are filled ot not to avoid mistakes or error in the final stage.example if a we asked phone number from the customer but the customer gave us the mail id so he given the wrong information.using data preprocessing we can check whether he gave the relevant information to avoid the future problem.

Data preprocessing which involves structured and unstructured data.

In structured data usually have rows and columns in which each row and columns are properly filled.there wont be any mismatching data in it.

In unstructured data the data will not in a proper manner like any rows or columns may be empty.

From this session I understood about how data cleaning,preprocessing are important and how data analysis works.

Then he explained about python how to set up and run and how to import some of the packages which is not inbuild using PIP3.

## Task:

Today riche gave me a task where he shares the excel sheet which contains thousands of rows and columns in that I have to delete any one column and NULL should be printed in the empty alphabets column and 00 should be printed in the number column.

I need to write a code using python for the above mentioned statements.

