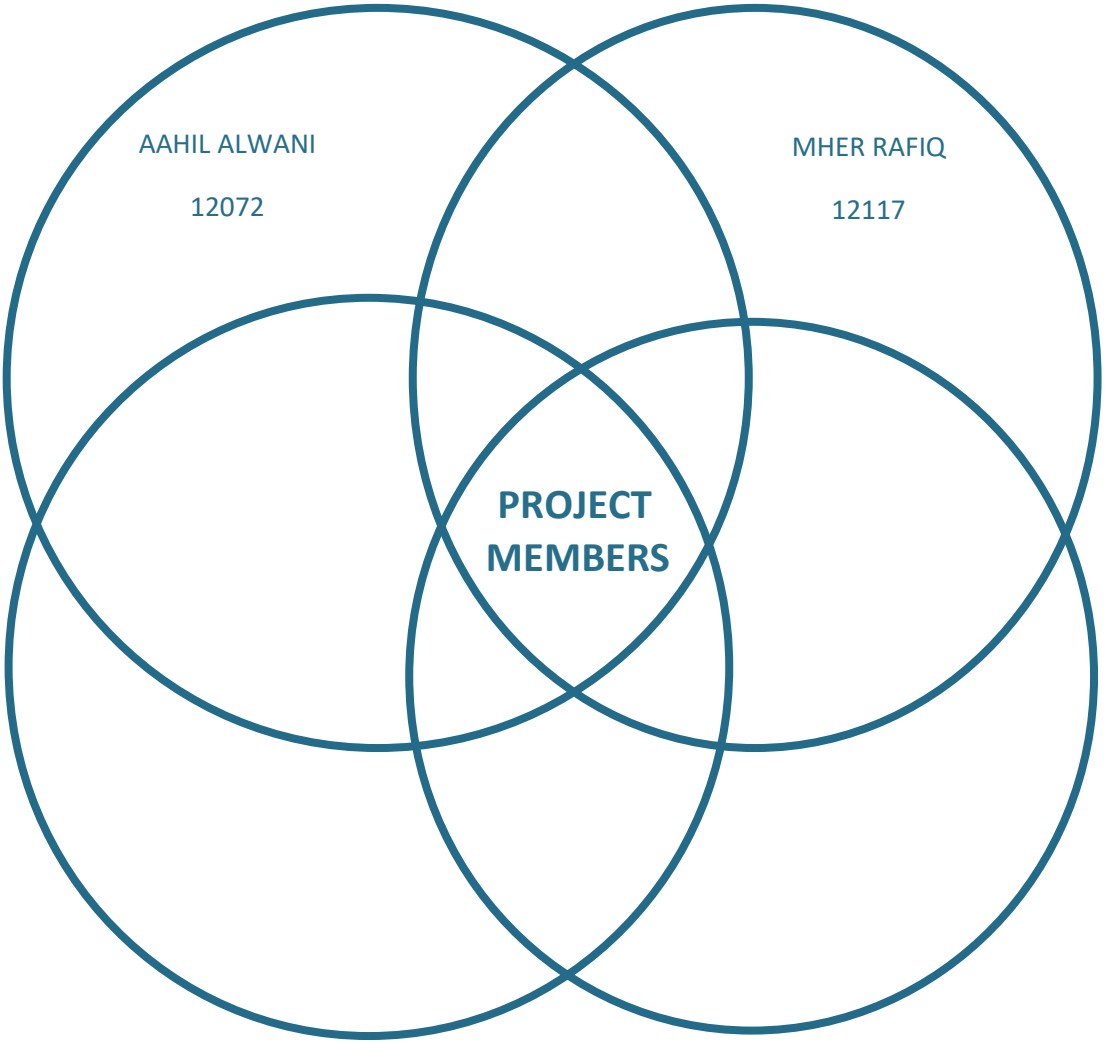
IMPLEMENTATION OF VENN DIAGRAM USING PYTHON

DISCRETE MATHEMATICS



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VENN DIAGRAM:

A Venn diagram is an illustration that uses circles to show the relationships among things or finite groups of things. Circles that overlap have a commonality while circles that do not overlap do not share those traits.

Venn diagrams help to visually represent the similarities and differences between two concepts. They have long been recognized for their usefulness as educational tools. Since the mid-20th century, Venn diagrams have been used as part of the introductory logic curriculum and in elementary-level educational plans around the world.

APPLICATION OF VENN DIAGRAM:

Venn diagrams are used to depict how items relate to each other against an overall backdrop, universe, data set, or environment. A Venn diagram could be used, for example, to compare two companies within the same industry by illustrating the products both companies offer (where circles overlap) and the products that are exclusive to each company (outer circles).

Venn diagrams are, at a basic level, simple pictorial representations of the relationship that exists between two sets of things. However, they can be much more complex. Still, the streamlined purpose of the Venn diagram to illustrate concepts and groups has led to their popularized use in many fields, including statistics, linguistics, logic, education, computer science, and business.

VENN DIAGRAM IN PYTHON:

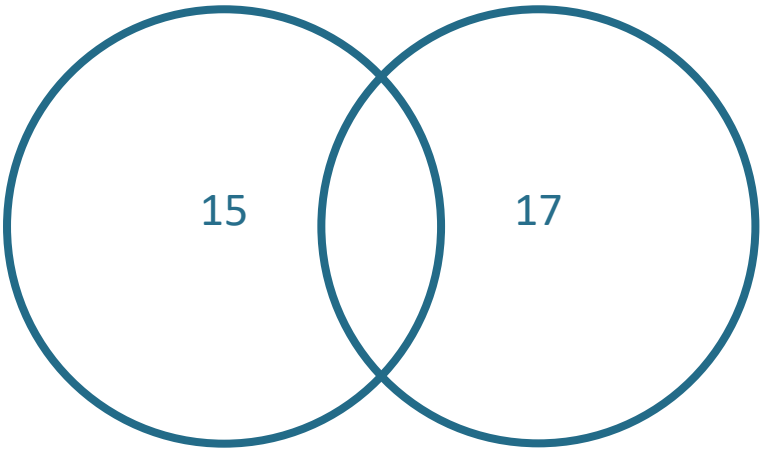
Python is a popular programming language. Python can be used on a server to create web applications. Python can be used to construct Venn diagrams using Python built-in methods. We have chosen Python because it is an easy programming language; moreover, it is an AI programming language.

MAIN OBJECTIVE IN OUR PROJECT:

1. **Number Input;**
   We will construct Venn diagram by asking user how many circles they want. After that, we will ask users the options:
   1. A / B
   2. Only A/ Only B

   This is for two circles. The user must input numbers only. After the user inputs the number, the numbers will be set accordingly.

   Eg: if user inputs A=30, B=30, and Only A=15, Only B=17
   then Venn diagram would be:



   And rest set equations will be shown to the user:

i. A U B = 15 + 17 + (30-15) + (30 – 17) = 60
ii. A ∩ B = 0
iii. (A U B)' = A' ∩ B' = 0
iv. A' U B = (30 – 15) + 30 = 45
v. A U B' = 30 + (30 - 17) = 43

We will try our level best to show the shaded parts of the above equations.

2. **Element inputs:**
   In this, we will ask user what elements they have to input in the set. After that, we will separate the elements into equations, i.e: A U B, A ∩ B, etc. We will show all the elements in the Venn diagram.