How to create a design thinking problem statement to keep your product on track

the **Design Thinking process**, this step is what's known as the "define" stage.

As the second step in the Design Thinking process, the **define** stage is where you'll establish a clear idea of exactly which problem you will solve for the user. You'll then shape this into a **problem statement** which will act as your northern star throughout the design process.

Why is the define stage so important?

The define stage ensures you fully understand the goal of your design project. It helps you to articulate your design problem, and provides a clear-cut objective to work towards. A meaningful, actionable problem statement will steer you in the right direction, helping you to kick-start the ideation process (see **Stage Three of the Design Thinking process**) and work your way towards a solution.

2. What is a problem statement?

A problem statement identifies the gap between the current state (i.e. the problem) and the desired state (i.e. the goal) of a process or product. Within the design context, you can think of the user problem as an unmet need. By designing a solution that meets this need, you can satisfy the user and ensure a pleasant user experience.

What makes a good problem statement?

A good problem statement is human-centered and user-focused. Based on the insights you gathered in the empathize phase, it focuses on the users and their needs—not on product specifications or business outcomes. Here are some pointers that will help you create a meaningful problem statement:

3. How to write a meaningful problem statement

Writing a meaningful problem statement can be extremely challenging. How do you condense all the complexities of the user's conscious and unconscious desires into one simple, actionable statement? Fortunately, there are some tried-and-tested methods that will help you do just that.

4. What comes after the define phase?

5 STEPS OF THE DESIGN THINKING PROCESS

EMPATHIZE ··> DEFINE ··> IDEATE ··> PROTOTYPE ··> TEST
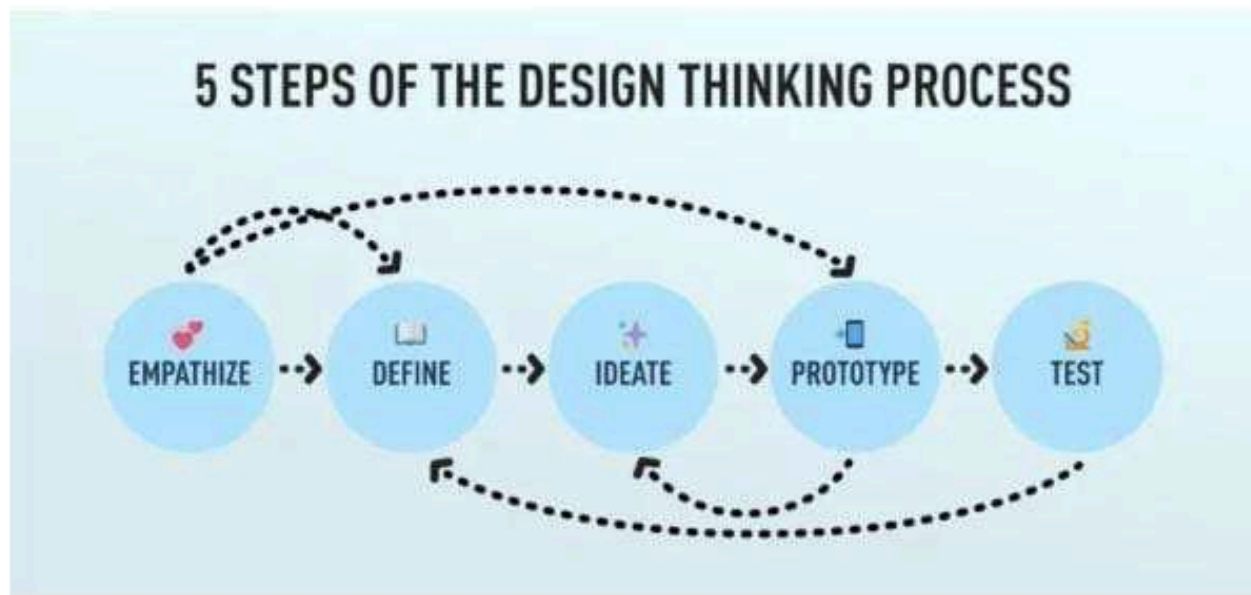
By the end of the define phase, you'll have turned your findings from the empathize stage into a meaningful, actionable problem statement. With your problem statement to hand, you'll be ready to move on to the **ideation phase**, where you'll turn your problem

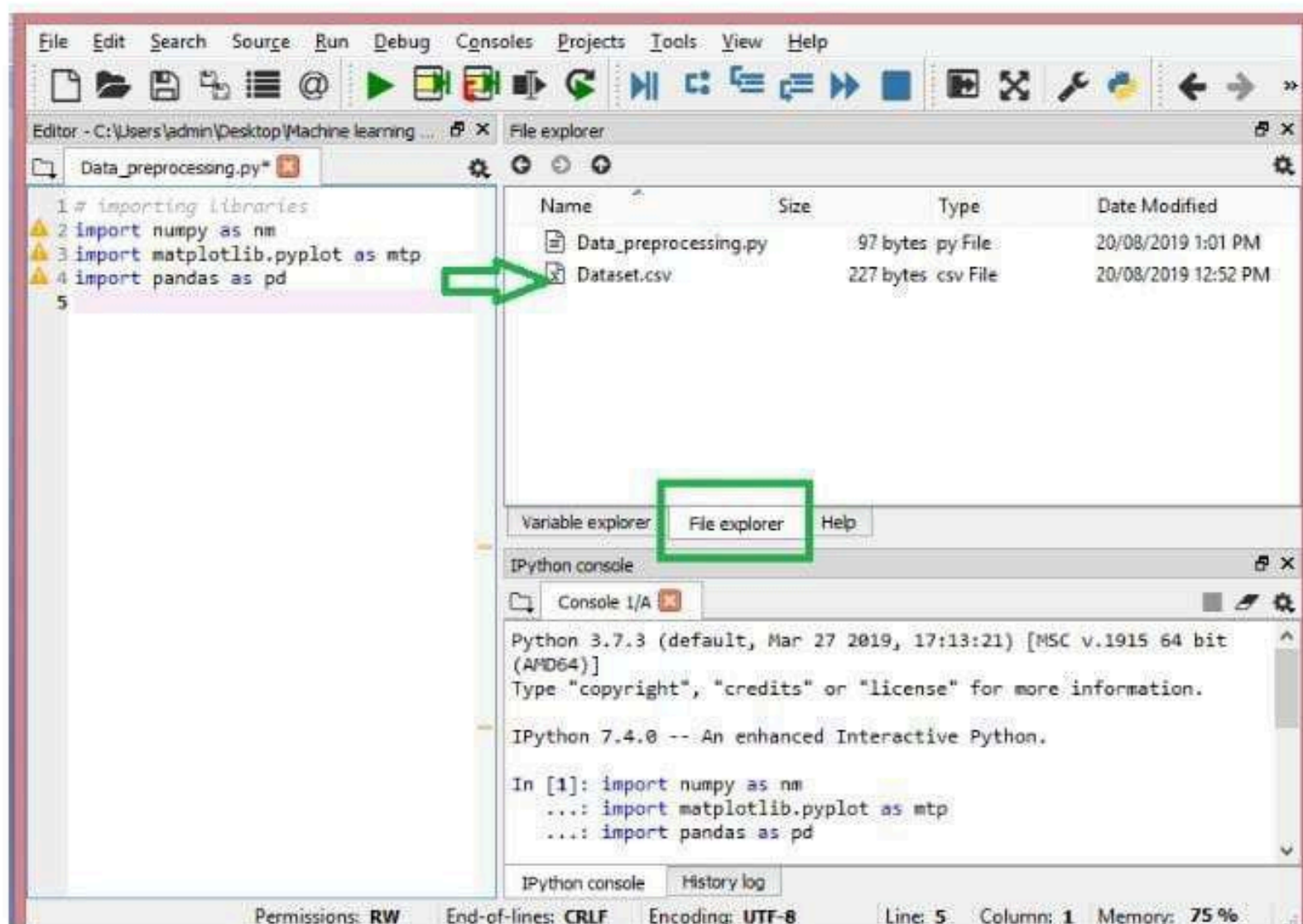# Data Preprocessing in Machine learning

Data preprocessing is a process of preparing the raw data and making it suitable for a machine learning model. It is the first and crucial step while creating a machine learning model.

When creating a machine learning project, it is not always a case that we come across the clean and formatted data. And while doing any operation with data, it is mandatory to clean it and put in a formatted way. So for this, we use data preprocessing task.

- Getting the dataset

- Importing libraries

- Importing datasets

- Finding Missing Data

- Encoding Categorical Data

- Splitting dataset into training and test set

- Feature scaling

Here, in the below image, we can see the Python file along with required dataset. Now, the current folder is set as a working directory.

As in the above image, indexing is started from 0, which is the default indexing in Python. We can also change the format of our dataset by clicking on the format option.

```python
#handling missing data (Replacing missing data with
from sklearn.preprocessing import Imputer
imputer= Imputer(missing_values ='NaN', strategy='m
#Fitting imputer object to the independent variables
imputerimputer= imputer.fit(x[:, 1:3])
#Replacing missing data with the calculated mean va
x[:, 1:3]= imputer.transform(x[:, 1:3])
```

Output:

```
array([['India', 38.0, 68000.0],
       ['France', 43.0, 45000.0],
       ['Germany', 30.0, 54000.0],
       ['France', 48.0, 65000.0],
       ['Germany', 40.0, 65222.222222222
       ['India', 35.0, 58000.0],
       ['Germany', 41.111111111111114, 5
       ['France', 49.0, 79000.0],
       ['India', 50.0, 88000.0],
       ['France', 37.0, 77000.0]], dtype
```

x - NumPy array

	0	1	2	3	4
0	0	0	1	38	68000
1	1	0	0	43	45000
2	0	1	0	30	54000
3	1	0	0	48	65000
4	0	1	0	40	65222.2
5	0	0	1	35	58000
6	0	1	0	41.1111	53000
7	1	0	0	49	79000
8	0	0	1	50	88000
9	1	0	0	37	77000

Format   Resize   ☑ Background color

Save and Close   Close

For Purchased Variable:

```
labelencoder_y= LabelEncoder()

y= labelencoder_y.fit_transform(y)
```

What Are Innovation Strategies? (With Stages and Types)

An innovation strategy is a scheme implemented by a business to foster breakthroughs in technology or service delivery methods. Innovation heavily influences the development of new products or services in a company, and different companies employ distinct strategies to accomplish this goal. Understanding the various innovation strategies may help you determine which strategy might work best. In this article, we explain the meaning of innovation strategies, discuss the various types, and explore the stages involved in developing an innovation strategy.

What are innovation strategies?

Innovation strategies are common innovation ambitions and detailed directions for generating new value in a business for which customers pay. It's a collection of rules and behaviours aimed at promoting organizational growth and development. The most forward-thinking companies recognize that great, novel ideas require an ideal atmosphere to flourish. For some people, innovation refers to tiny changes or additions to current products, processes, or services. For others, innovations may take the form of ground-breaking technology breakthroughs or industry-changing business concepts. In either case, innovations emerge from surroundings and processes created to foster their growth.

1. Incremental innovation

Incremental innovation entails gradually developing concepts, products, or services in an existing market. With this type of innovation, new products are slightly better than their previous versions and incorporate only minor modifications to current product formulations or service delivery techniques. Without compromising the product's essential functions, you can make the products more compact, user-friendly, appealing, and efficient through continuous development. For example, a razor company may continually improve their products by incorporating new features, such as extra blades, heated razors, and a rotating head.

2. Disruptive innovation

Disruptive innovations ☒ are theories regarding concepts, products, or services that disrupt existing value chains or establish entirely new ones. While disruptive innovations initially appear to be less effective when judged using traditional value measurements, they have distinct characteristics that are of value for small market segments. Such innovations frequently convert non-customers into customers but may not always fulfill core customers' demands and preferences. For example, electricity, the automobile, and television were all disruptive technologies.

3. Sustaining innovation

Sustaining innovation is the opposite of disruptive innovation. Rather than generating new value networks, it enhances and expands current ones to fulfil customer needs. As with incremental innovations, product innovation metrics improve slightly with each iteration, minimizing errors. Newly updated products may be more expensive and have bigger margins than before if they appeal to more demanding high-end clients with better performance. For example, cellphone manufacturers release updated and better models every year to satisfy consumer demand and implement new technology.

4. Radical innovation

Radical innovation is quite uncommon because it shares features with disruptive innovation, but you can distinguish it by the simultaneous employment of revolutionary technology and new business models. It even provides solutions to problems that individuals are unaware of, transforming marketplaces and even the entire economy. Technological advancements such as personal computers and the internet are examples of radical advancements that have altered how the world works and communicates.

5. Product innovation

Product innovation ☑ is one of the most prevalent types of innovation, as it enhances a product's nature and qualities. You can use other components from previously manufactured products when engaging in this type of innovation. True product innovation can involve new technologies, creatively combining current technologies, or perhaps requiring no technology at all. For example, automobile manufacturers produce new models each year.

6. Service innovation

Service innovation is the process of significantly improving a concept, product, or service process in new or existing markets. This may be a new client engagement or distribution channel, an improved transmission technique, or a new client interface solution. The way you service consumers is an excellent opportunity to differentiate yourself, add value to their lives, and increase income for the business. A significant component of a successful business is making the customer's life easier. The more effectively you meet consumer demands and expectations, the better your future in the market.

7. Process innovation

This process integrates the talents, technology, and organizational structure necessary to manufacture or offer products or services. Companies use the term process innovation to refer to the adoption of new manufacturing or transportation procedures. It can also relate to indirect company products and services. Process innovation occurs when companies implement new technology or improved processes to save time and money or better serve customers. They're often in the form of new technology, equipment, or software, causing cultural or structural adjustments. Typically, the final product doesn't change during the innovation process, rather, only its manner of consumption alters.