

Research Assignment: What is a Variable in C#?

Question

1. What is a Variable?

Research and explain the following:

- What is a variable in programming?
- Why are variables necessary in a program?
- How do variables allow a program to store and manipulate data?

ANSWER

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1. What is a Variable?

A **variable** in programming is a named storage location used to hold data that a program can use and change while it is running. In C#, every variable has a **data type**, which determines what kind of value it can store, such as an integer, decimal number, character, or text.

For example:

```
int age = 20;  
string name = "naima";
```

Here, age and name are variables. The variable age stores the number 20, while name stores the text "naima".

2. Why are Variables Necessary in a Program?

Variables are necessary because programs need a way to **store information and use it later**. Without variables, a program would have difficulty remembering values, performing calculations, or responding to changing information.

For example:

```
int price = 50;  
int quantity = 3;  
int total = price * quantity;
```

In this example, variables allow the program to store the price and quantity and then calculate the total. The result stored in `total` is 150.

3. How Do Variables Allow a Program to Store and Manipulate Data?

Variables allow a program to **store data in memory** and access that data by using the variable's name. The stored value can also be changed or used in calculations and other operations.

For example:

```
int score = 70;  
score = score + 10;
```

Initially, `score` contains 70. The program then adds 10, so the value of `score` becomes 80.

Therefore, variables are an important part of C# programming because they provide a way to **store, access, change, and manipulate data** while a program is running.