

Research Assignment: What is a Variable in C#?

Questions

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?

Answers

1. What is a variable in programming?

A variable is a named storage location used by a program to store data. You can think of it as a labeled box: the variable name identifies the box, while the value is the information stored inside it. A variable also has a data type that tells C# what kind of data it can store.

Example:

```
int age = 20;
```

int is the data type, **age** is the variable name, and **20** is the value stored in the variable.

2. Why are variables necessary in a program?

Variables are necessary because programs need to store information so they can use it later, process it, and change it when necessary. For example, a student management program may need to store a student's name, age, marks, or GPA. Variables give the program a clear way to keep and work with this information.

Example:

```
string studentName = "Amina";  
int age = 20;  
double gpa = 3.8;
```

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 when it is needed. The stored values can be used in calculations and other operations, and their values can be changed while the program is running.

Example:

```
int score = 50;  
score = score + 10;
```

```
Console.WriteLine(score);
```

At first, *score* contains 50. The program adds 10, so *score* becomes 60. This shows that variables can store, access, and manipulate data.