

In summary, local variables are defined within a block, function, or method and are accessible within that block. Instance variables are non-static variables declared in a class outside constructors, methods, and other blocks. Static variables are similar to instance variables but common to every object of the class.

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# What is difference b/w instance and static variable in cpp

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## ✳ Answer

### Difference Between Instance and Static Variables in C++

In C++, instance variables and static variables serve different purposes within a class.

#### Instance Variables

- **Definition:** Instance variables are non-static variables declared in a class outside constructors, methods, and other blocks.
- **Memory Allocation:** Memory for instance variables is allocated when an object of the class is created and destroyed when the object is destroyed.
- **Scope:** Each object of the class has its own copy of instance variables.
- **Access:** Instance variables can have different values across different objects.

- **Example:**

```
cpp
class Student {
    int roll_no; // instance variable
};
```

## Static Variables

- **Definition:** Static variables are declared using the static keyword within a class outside any method or constructor.
- **Memory Allocation:** Memory for static variables is allocated at the start of the program and destroyed at the end.
- **Scope:** There is only one copy of each static data member for the entire class, shared among all objects.
- **Access:** Changes made to static variables through one object reflect in all other objects.
- **Example:**

```
cpp
class Student {
    static float passing_marks; // static variable
};
float Student::passing_marks = 21;
```

In summary, instance variables are specific to each object of a class, with memory allocated per object, while static variables are common to all objects of a class, with memory allocated once for the entire program [1](#) [2](#) [3](#) [4](#) [5](#).

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