Lesson 1 : variables and data types in apex ?

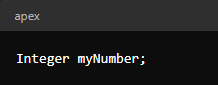
Day 1

1. Introduction to variables :

What is a variable?

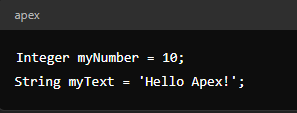
* In apex , a variable is a named storage location in memory that holds a value. **This value can change during the execution of the program** . variables are fundamentals because they allow you to **store data** that apex code can manipulate , such as storing user input , intermediate calculation or database records.

Declaring a variable in apex :

* To declare a variable in apex , you **specify its data type followed by the variable’s name** . this is similar to java and c# , where you also declare variables with a type and a name .
* Syntax :

|  |  |
| --- | --- |
| Integer | Data type for whole number (not decimal) |
| Number | Name of variable where we store value |

Initializing a variable :

* In apex you can assign an initial value to a variable when :
  + You first declare it
  + Or initialize it later in the code

1. Data types in apex :

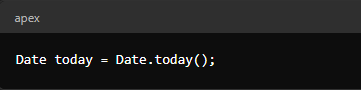
What are data types ?

* Data types in apex define the kind of data a variable can hold . apex support several primitive data types that you will frequently use when developing salesforce apps.

**Common data types** in apex :

* Integer : represents 32-bit signed number . -2 147 483 <= X<=2 147 483
* Double : 64-bit signed decimal number .used for value that require precision like monetary amounts.
* Boolean : true or false value . useful for making decisions e.g., is a user logged in.
* String : represents a sequence of characters typically for storing text .

**Additional apex data types** :

* Date and DateTime : used to represent dates and timestamps .
* Decimal : like Double but provide more precision and commonly used for financial calculations .

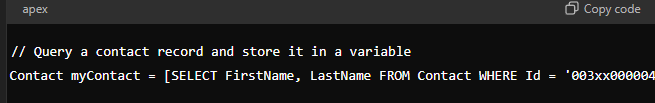
1. Naming conversions and best practices :

Naming variables in apex :

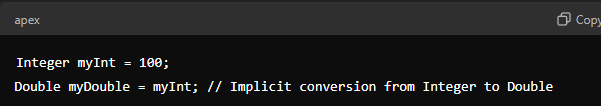
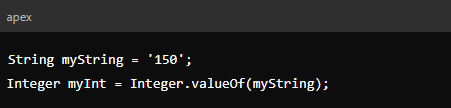
* Choose descriptive names that make it clear what the var is used for.
  + customerAge BETTER THEN age .
* Follow camelCase naming convention = capital first letter of each subsequent word.
  + firstName , totalAmountGaz.
* Apex-specific best practices : avoid reserved keywords : public , static , private .etc
* Apex-specific best practices : always initialize variable to avoid null pointer exception.

1. Practical Applications in apex :

Why variables and data type matter in apex ?

**Variables** in apex **are essential when writing code that interacts with SF database**. (You store records in variables) example :

🡪 this query **retrieves** a contact from SF **and stores** it **in** the myContact **variable** , allowing you to manipulate or display the data as needed.

1. Parsing and converting data types in apex
   * Type conversion :
     + It’s the process of changing a variable from one data type to another. It’s essential when you need to change a variable’s data type to perform specific operations or when data is provided in a different format than needed.
   * **Implicit conversion : automatically** 
     + It happens automatically when apex can **safely convert** one data type to another without any loss of information. E.g.,
   * **Explicit conversion (casting) : manual** conversion
     + It requires the use of specific methods to convert between types.
     + Apex provide many methods like :
       - String.valueOf():
       - Integer.valueOf();
       - Double.valueOf();
   * Common conversions in apex
     + String to Integer :

String myString = '123'; Integer myInt = Integer.valueOf(myString);

* + - String to Double :

String myString = '99.99'; Double myDouble = Double.valueOf(myString);

* + - String to Decimal :

String myString = '99.99'; Decimal myDecimal = Decimal.valueOf(myString);

* + - String to Date :

String dateString = '2024-08-26'; Date myDate = Date.valueOf(dateString);

* + - Integer to String :

Integer myInt = 100; String myString = String.valueOf(myInt);

* + - Double to integer :

Double myDouble = 99.99; Integer myInt = myDouble.intValue(); // Converts to 99

* + - Decimal to Double :

Decimal myDecimal = 123.45; Double myDouble = myDecimal.doubleValue();

* + - Boolean to String :

Boolean myBool = true; String myString = String.valueOf(myBool);

* + - Date to DateTime :

Date todayDate = Date.today();

DateTime dateTime = DateTime.newInstance(todayDate.year(), todayDate.month(), todayDate.day());

System.debug('Converted DateTime: ' + dateTime);

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Lesson 2 : control structures in apex

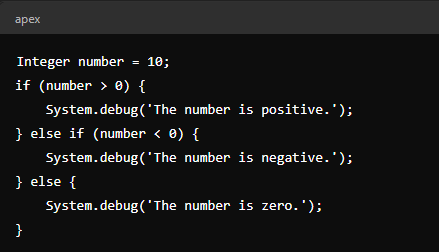
Day 2

1. If-else statements

Definition :

* If else statement enables conditional logic , allowing your program to execute specific code paths based on evaluated conditions.

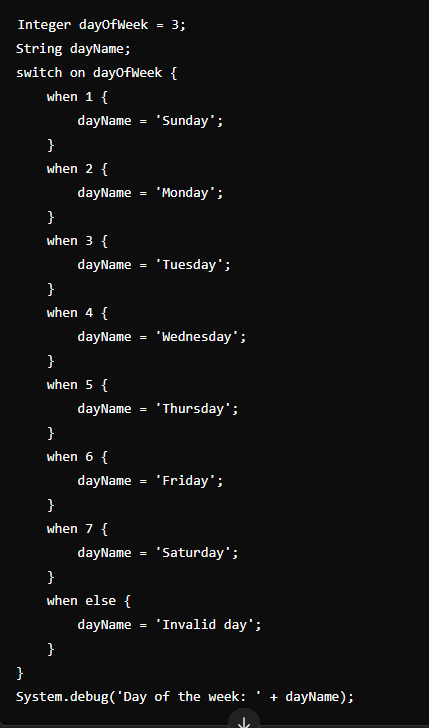
Nested if-else statements

* Sometime you’ll need to check multiple conditions . you can nest ‘if-else’ statement within each other.

1. Switch statements

What is switch statement ?

* It provides a clean and efficient way to handle multiple possible values of a single expression .

Syntax :

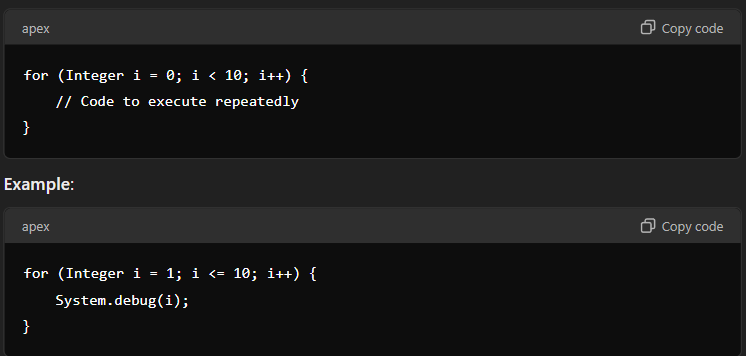
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Lesson 3 : loops in apex (for , while )

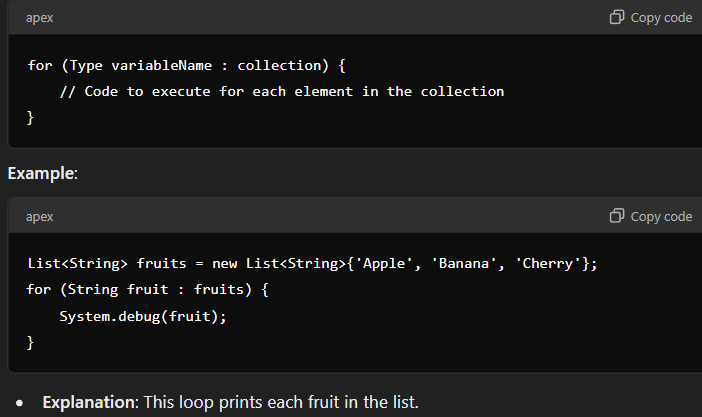
Day 3

1. For loop
2. What is a for loop ?

A for loop allows you to repeat a block of code a specific number of times. it’s typically used when you know in advance how many times you want to iterate over a sequence or perform an action.

1. Syntax
2. Foreach loop = enhanced for loop

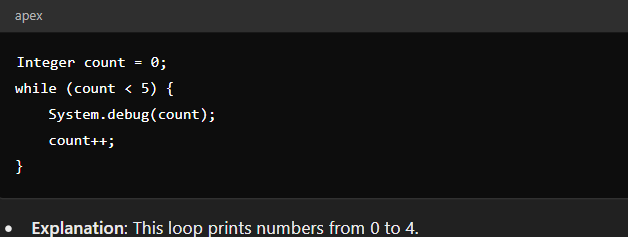
It’s a loop used to iterate over collections , maps ,lists or sets . it’s a simpler and more readable way to loop through elements of a collection without needing an index.



1. While loop

Definition

It’s a loop that repeats a block of code as long as a specified condition is true . it’s typically used when the number of iterations isn’t known in advance. The repetition is based on a condition rather than a fixed number.

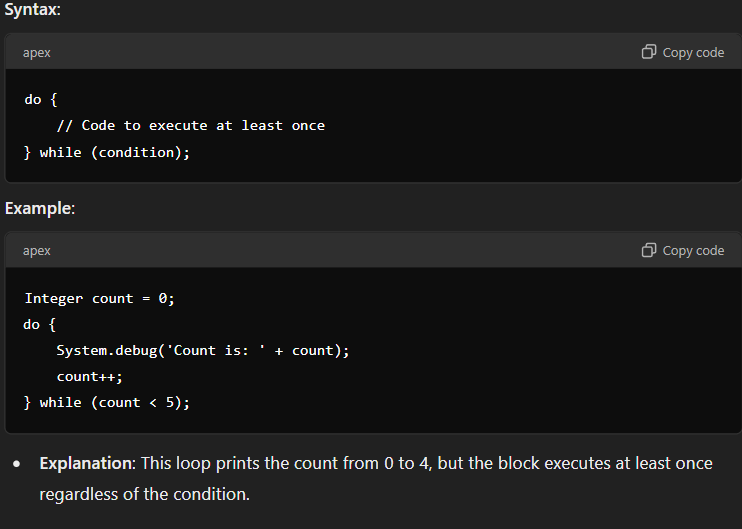
Syntax

1. Do-while loop

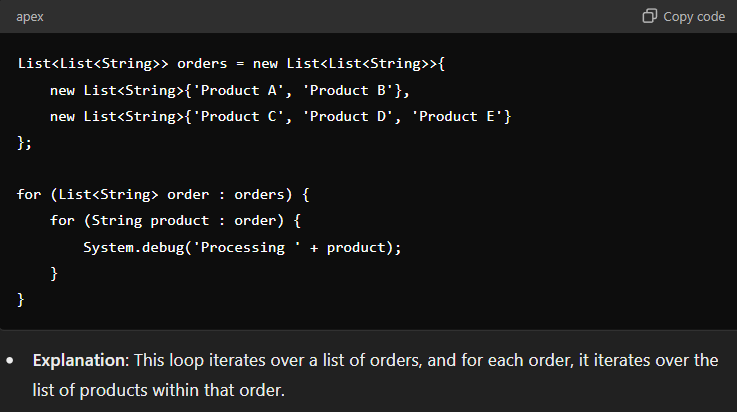
Definition

This loop is similar as the “while” loop , but one key difference is the code block is guaranteed to execute at least once , even if the condition is false initially .

In this loop the body is executed at least once before the condition is evaluated.



1. Nested loop = loop inside a loop

It’s a loop within another loop . they are used to perform complex iterations , such as iterating over multi-dimensional collections or performing repetitive tasks within repetitive task.

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Lesson 4 : functions and methods in apex

Day 4

Study topics :

* Define functions and methods
  + What is a function and what is a method?
  + Learn how to define a function or method in apex , including parameters and return types .
* Functions vs methods
  + Explore the difference between functions and methods , particularly the context of OOP and apex.
  + Understand how methods in apex and functions that belong to a class .
* Instance vs class variables
  + Instance variables vs class variables
  + Learn how to declare and use these variables in apex
* Instance vs class methods
  + Differentiate between instance methods and class methods
  + Learn how to define and use these methods in apex .
* Scope of variables in functions
  + Explore the scope of variables within functions and methods
  + Understand how local , instance and class variables interact .

1. Define functions and methods

What are functions and methods ?

Function

* General def : a function is a block of reusable code that performs a specific task . in many programming languages , a function can exist independently outside of any class .
* In apex : apex does not support standalone functions. every function in apex must be defined within a class . which means that technically , every function is a method in apex.

Methods

* General def : a method is a function that is associated with a class or an object . it can operate on data that belongs to the class or object
* In apex: since apex is a class-based language , all functions are methods. Methods in apex can be instance methods (which operate on instance variable) or class methods (which operate on class variables.)

How to define a method in apex ?