

Identifiers

- An identifier in VHDL is composed of a sequence of one or more characters.
- A legal character is an upper-case letter (A... Z), or a lower-case letter (a.. z), or a digit (0 . . . 9) or the underscore (_) character.
- The first character in an identifier must be a letter and the last character may not be an underscore.

Identifiers cont..

- Lower-case and upper-case letters are considered to be identical when used in an identifier; as an example. Count, COUNT, and CouNT, all refer to the same identifier.
- Two underscore characters cannot appear consecutively.

Identifiers cont..

- Some more examples of identifiers are
:

DRIVE_BUS

SelectSignal

RAM_Address

SET_CK_HIGH

CONST32_59

r2d2

Data Objects

- A data object holds a value of a specified type. It is created by means of an object declaration. An example is **variable COUNT: INTEGER;**
- This results in the creation of a data object called COUNT which can hold integer values. The object COUNT is also declared to be of *variable class*.

DATA OBJECTS & CLASSES

- Every data object belongs to one of the following three classes:
 1. *Constant: An object of constant class can hold a single value of a given type. This value is assigned to the object before simulation starts and the value cannot be changed during the course of the simulation.*

DATA OBJECTS & CLASSES

Cont..

- 2. Variable: An object of variable class can also hold a single value of a given type. However in this case, different values can be assigned to the object at different times using a variable assignment statement.*
- 3. Signal: An object belonging to the signal class has a past history of values, a current value, and a set of future values. Future values can be assigned to a signal object using a signal assignment statement.*

DATA OBJECTS & CLASSES

Cont..

- *An object declaration is used to declare an object, its type, and its class, and optionally assign it a value. Some examples of object declarations of various types and classes follow.*

Constant Declarations

Examples of constant declarations are-

```
constant RISE_TIME: TIME := 10ns;
```

```
constant BUS_WIDTH: INTEGER := 8;
```

DATA OBJECTS & CLASSES

Cont..

- Variable Declarations Examples of variable declarations are-

```
variable CTRL_STATUS:  
    BIT_VECTOR(10 downto 0);
```

```
variable SUM: INTEGER range 0 to 100 := 10;
```

```
variable FOUND, DONE: BOOLEAN;
```


DATA OBJECTS & CLASSES

Cont..

Signal Declarations

Here are some examples of signal declarations.

```
signal CLOCK: BIT;
```

```
signal DATA_BUS: BIT_VECTOR(0 to 7);
```

```
signal GATE_DELAY: TIME := 10 ns;
```