**SESSION - 2**

**PYTHON OBJECT TYPES**

In Python, data takes the form of objects:

* Built-in objects that Python provides, or
* Objects we create using Python classes or
* External language tools such as C extension libraries

 object has set of values and associated operations. We can say, in python 'Object' is fundamental notion.

**PYTHON BUILD IN OBJECT TYPES**

**WHY TO USE BUILD-IN TYPES**

* Because we get powerful tools such as collections (lists) and search tables (dictionaries) for free, you can use them immediately.
* Built-in objects are often more efficient (already optimized) than custom data structures.
* Built-in objects are a standard part of the language.

**SEQUENCES**

These represent finite ordered sets indexed by non-negative numbers. !!

Sequences are distinguished according to their mutability:

Immutable sequences

An object of an immutable sequence type cannot change once it is created. (If the object contains references to other objects, these other objects may be mutable and may be changed; however, the collection of objects directly referenced by an immutable object cannot change.)

Mutable sequences

Mutable sequences can be changed after they are created. The subscription and slicing notations can be used as the target of assignment and "del" (delete) statements.

**PYTHON’S CORE DATA TYPES**

**Object type Example literals/creation**

Numbers 1234 , 3.1415 , 3+4j , 0b111 , Decimal() , Fraction()

Strings 'spam' , "Bob's" , b'a\x01c' , u'sp\xc4m'

Lists [1, [2, 'three'], 4.5] , list(range(10))

Dictionaries {'food': 'spam', 'taste': 'yum'} , dict(hours=10)

Tuples (1, 'spam', 4, 'U') , tuple('spam') , namedtuple

Files open('eggs.txt') , open(r'C:\ham.bin', 'wb')

Sets set('abc') , {'a', 'b', 'c'}

Other core types Booleans, types, None

Program unit types Functions, modules, classes

In formal terms, Python is dynamically typed, a model that keeps track of types for you automatically instead of requiring declaration code, but it is also strongly typed, a constraint that means you can perform on an object only operations that are valid for its type.

**PYTHON PROGRAM**

Python program can be decomposed in to

* modules,
* statements,
* expressions, and
* objects

The relationship defined as:

* Programs are composed of modules.
* Modules contain statements.
* Statements contain expressions.
* Expressions create and process objects.