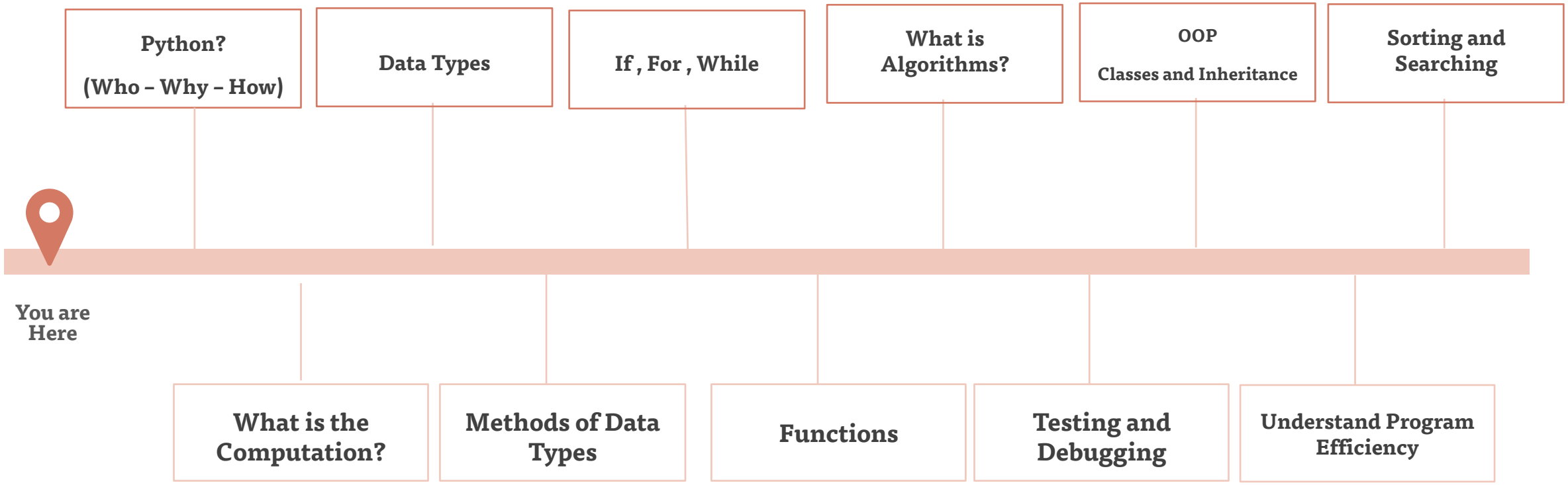
Information Technology Institute

Programming Fundamentals Using **Python**

Romisaa Galal

GOALS


Python?
(Who – Why – How)
Data Types
If , For , While
What is Algorithms?
OOP
Classes and Inheritance
Sorting and Searching
You are Here
What is the Computation?
Methods of Data Types
Functions
Testing and Debugging
Understand Program Efficiency

COURSE OBJECTIVES

Behind every mouse click and touch-screen tap, there is a computer program that makes things happen. This course introduces the fundamental building blocks of programming and teaches you how to program using the Python language.

No prerequisite knowledge is needed.

we chose for you

Write a program that choose a random website name from list and open it in your browser :

Input

No Input

Hint: Use Standard Library Modules

Output

Website Visit on Web Browser

“Samy is an Employee, He works in ITI and He has a car.
He goes everyday except weekends to ITI Smart Village
Office by his fiat 128 car”

Story

Story Members

Samy

`Employee`

`Person`

ITI

`Office`

Fiat128

`Car`

Additional Info

- **ITI** is an Office that has many employees and **Samy** is one of them.

- **Samy** is an Employee and He has a **fiat 128** Car.

- The distance from **Samy** Home to **ITI** Smart Village Office is **20 km**.

- **Samy** should arrive to **ITI** at before **9:00** unless that he will be late.

- **Velocity** (v) = Distance(d) / time(t).

- **FuelRate** decrease by **10%** every **10km** distance.

Setup AI Classes

1 Create the following classes:

- Person Class:
  - attributes (**name**, money, mood, healthRate).
  - methods (sleep, eat, buy).

- Employee Class (is a Person):
  - attributes (id , **car**, **email**, salary, **distanceToWork**)
  - methods (work, drive, refuel, send_mail)

- Office Class:
  - attributes (**name**, employees)
  - methods (get_all_employees, get_employee, hire, fire, calculate_lateness, deduct, reward)

- Car Class:
  - attributes (**name**, fuelRate, velocity)
  - methods (run, stop)

Implement Employee Methods

2- Implement the following methods:

- **sleep (**hours**):** - Method in Person Class(7 hours → happy, <7 hours → tired, >7 hours →Lazy)
- **eat (**meals**):** - Method in Person Class(3 meals → 100% hth , 2 meals →75% , 1 meal→ 50%)
- **buy (**items**):** - Method in Person Class (1 item → decrease money 10 L.E)
- **work (**hours**):** - Method in Employee Class(8 hours→happy, >8 hours → tired,<8 hours → Lazy)

Implement Car Methods

3 - Implement the following methods:

- **drive (**distance**):**

  - Method in Employee Class (Give the order to run method and give it distance and velocity).

- **refuel (**gasAmount = 100**):**

  - Method in Employee Class (add gasAmount to **fuelRate**).

- **run (**velocity, distance**):**

- Method in Car Class(When invoked it decreases the **fuelRate** and change the velocity to the input parameter of velocity . And it invoke the stop method and give it the remain distance (It is possible to stop before arrive thedestination because **fuelRate** become 0).

- **stop ():**

- Method in Car Class (Stop make the velocity changed to 0 and print notification with the remain distance or that you arrive the destintation)

- **Velocity** Property**:** must be between 0 to 200.

- **Fuel Rate** Property: must be between 0 to 100.

Implement Office Methods

3- Implement the following methods:

-**get_all_employees ():** Method in Office Class(Return a list of the current Employees)

-**get_employee (**empId**):** Method in Office Class(Return the Employees of givenid)

-**hire (**Employee**):** Method in Office Class(Hire the given Employee)

-**fire (**empId**):** Method in Office Class(Fire Employee with the given id)

-**deduct (**empId, deduction**):** Method in Office Class(Deduce Money from salary from Employee)

-**reward (**empId, reward**):** Method in Office Class(add Money to salary from Employee)

-**check_lateness (**empId, moveHour**):** Method in Office Class(Check if employee is late or not and deduce if he is late -10 and reward if he is not late +10)

-**calculate_lateness (**targetHour , moveHour, distance, velocity**): Static** Method in Office Class (Calculate If employee is late or not)

- **employeesNum** class variable whichdeclared the number of Employees in all offices.

- **change_emps_num (**num**)** classmethod which modify the number of Employees in all offices.