

COMPUTER SCIENCE EDUCATION WEEK  
2018

# INTRODUCTION TO PROGRAMMING

University of Dallas ACM Student Chapter  
Yeabkal Wubshit

# Introduction to Programming

## **Topics to be covered:**

Computer Program

Introduction to Python

Variables and Statements

Lists

Functions

**Computer Program:** is a collection of instructions that performs a specific task when executed by a computer.

TO REALIZE THE POWER OF  
PROGRAMMING...JUST THINK  
THAT EVERY GOOGLE SEARCH  
INVOLVES A SEARCH AMONG 30  
TRILLION PAGES, USUALLY IN  
UNDER A SECOND!

# How do we communicate with computers?

## PROGRAMMING LANGUAGES

- Programming languages are used in computer programming to create programs that implement specific algorithms.
- There are over 500 programming languages to choose from for programmers, but some programming languages are just more powerful and widely used than others.
- Today, we will learn some **Python**: an easy to learn, yet one of the most widely used and powerful programming languages available at your disposal.

```
print "Hello, world"
```

# Variables

A variable is a reserved memory location to store information.

You can use variables in Python to store different type of data, like strings, booleans, numbers, and other advanced data structures.

**How to define a variable in Python?**

variable name = variable Value

**Example:**

x = 5

y = 10

z = x + y # z becomes 15

name = "Bob"

city = "Dallas"



# Statements

A statement represents an action or command in a program. A program is simply a collection of a bunch of statements.

## Assignment Statements

x = 10

## If Statements

```
if x < 10:  
    print "x is less than 10"
```

```
majors = ["Music", "Physics", "Art", "Biology"]
grades = [85, 72, 94, 88, 99]
```

# Lists

**A list is a data structure in Python that is a changeable, ordered sequence of elements.**

**Defining a list**

```
my_empty_list = []
list_of_numbers = [10, 15, 20, 25]
```

> Note that elements in lists are indexed. The first element has index 0, the second has index 1, etc.

**Accessing elements of a list**

```
third_string = list_of_strings[2] # gives the
string at index 2
```

# Lists

## OTHER OPERATIONS ON LISTS

**Manipulating lists:**

```
list_of_numbers[0] = 30 # the first element  
of the list will be changed to 30.
```

**Adding an element to a list:**

```
list_of_numbers.append(40)
```

**Getting the length of a list:**

```
length = len(list_of_numbers)
```

**Looping over lists:**

```
for element in list_of_numbers:  
    print element
```

# Functions

**A FUNCTION IS A NAMED SECTION OF A PROGRAM PERFORMING A SPECIFIC TASK.**

**Defining a function**

```
def printMyName(name):  
    print "My name is", name
```

**Calling a function**

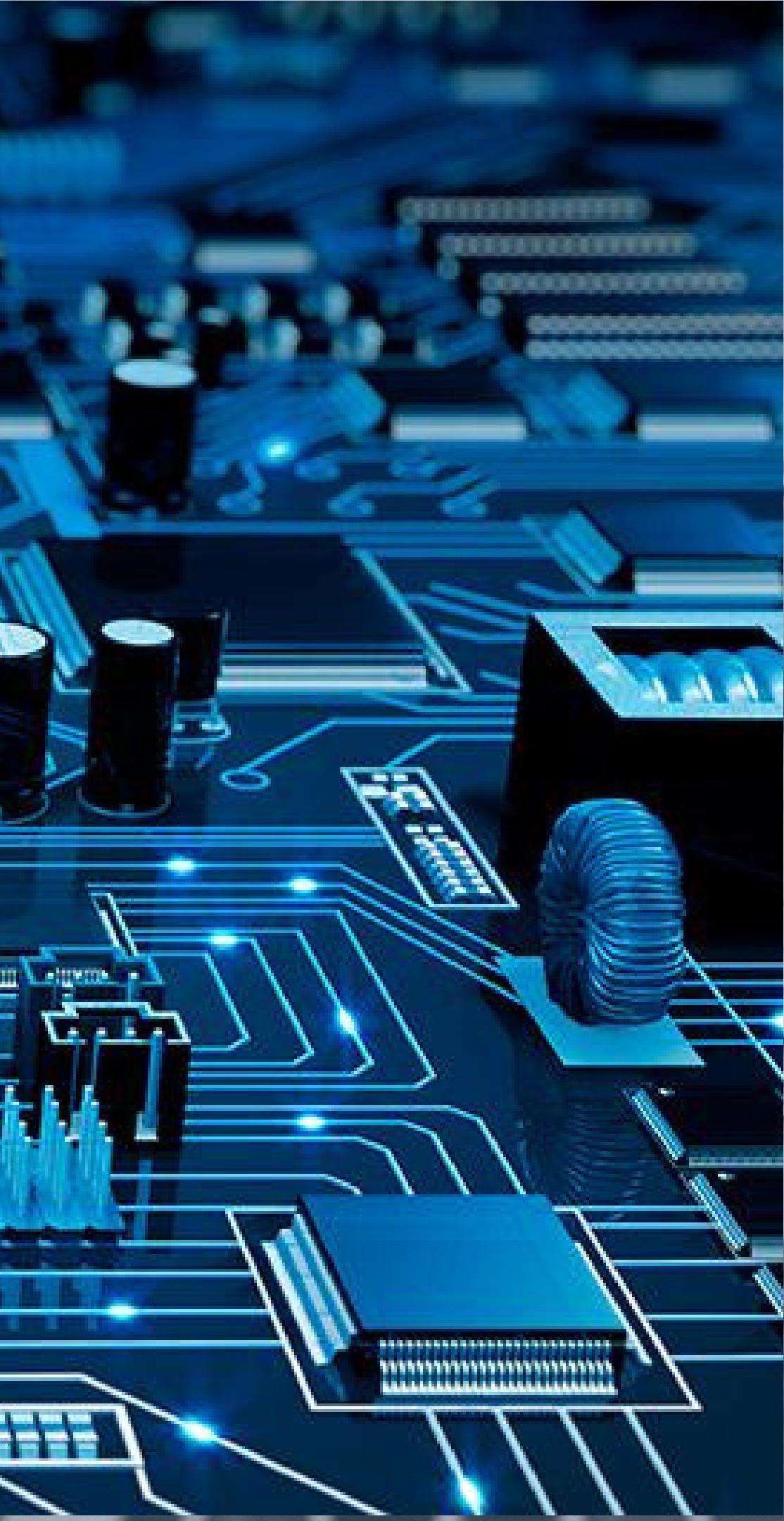
```
printMyName("Bob")  
# prints "My name is Bob"
```

**Example 2: function that prints the elements of a list.**

```
def printListElms(lst):  
    for elem in lst:  
        print elem
```

```
list_a = [1,2,3,4]  
printListElms(list_a)  
# Gives the output below:
```

```
1  
2  
3  
4
```



# Functions that return values

```
def addFive(num):  
    return num + 5
```

```
x = 10  
y = addFive(x)  
print y  
# 15
```

