Introduction to PYTHON programming language

Python programming language

- Python programming language was first developed by Guido van Rossum as a hobby project to keep him occupied during the week around Christmas.
- Van Rossum's goals for Python
  - **An easy and intuitive language that is understandable as plain English**
  - **It is powerful and suitable for everyday tasks**
  - **Open source**
- Currently, Python is one of the most popular programming languages.

Goals for this summer

- How to write and run simple Python programs
- Basic concepts: variables and common data types, arithmetic operation
- Basic program commands for loop and conditional operations,
- Some advanced topics: define function and list data structure

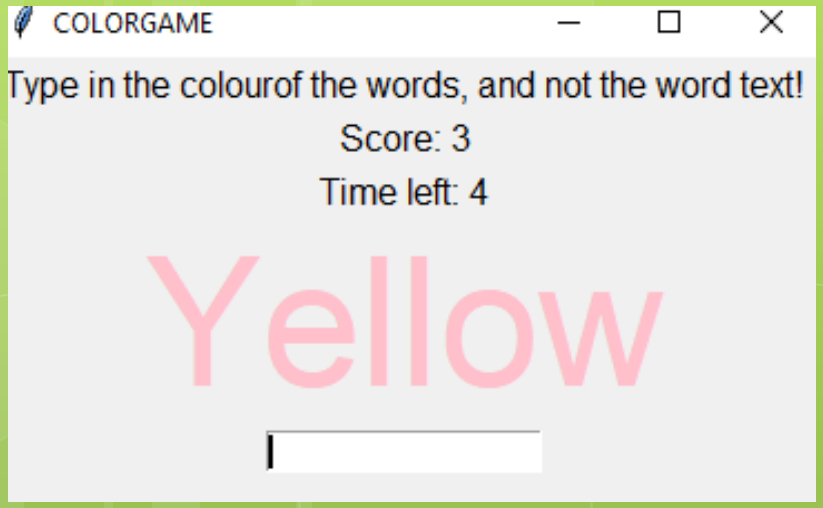
https://4hjccc.github.io/

4H Jackson County Computer Club

Welcome to 4H Jackson County Computer Club web site! In the summer of 2019, we will practice python programming. Topics to be learned during the club meetings are listed below. Some of the programs to be discussed in the meetings can be downloaded by clicking the program file names.

- Session 1: Introduction to Python programing language and Spyder (lect1.py)
  Variable and data type (lect2.py)
- Session 2: Condition and branch statements (lect3.py)
  Loop statements (lect4.py)
- Session 3: Arithmetic operation and string manipulation (lect5.py)
- Session 4: List data structure (lect6.py, lect6_challenge2_partial.py)
- Session 5: Creating functions (lect7.py)
- Session 6: Creating a simple game (lect8.py, lect8p1.py, lect8p2.py, lect8p3.py)

A simple Game that we are going to develop



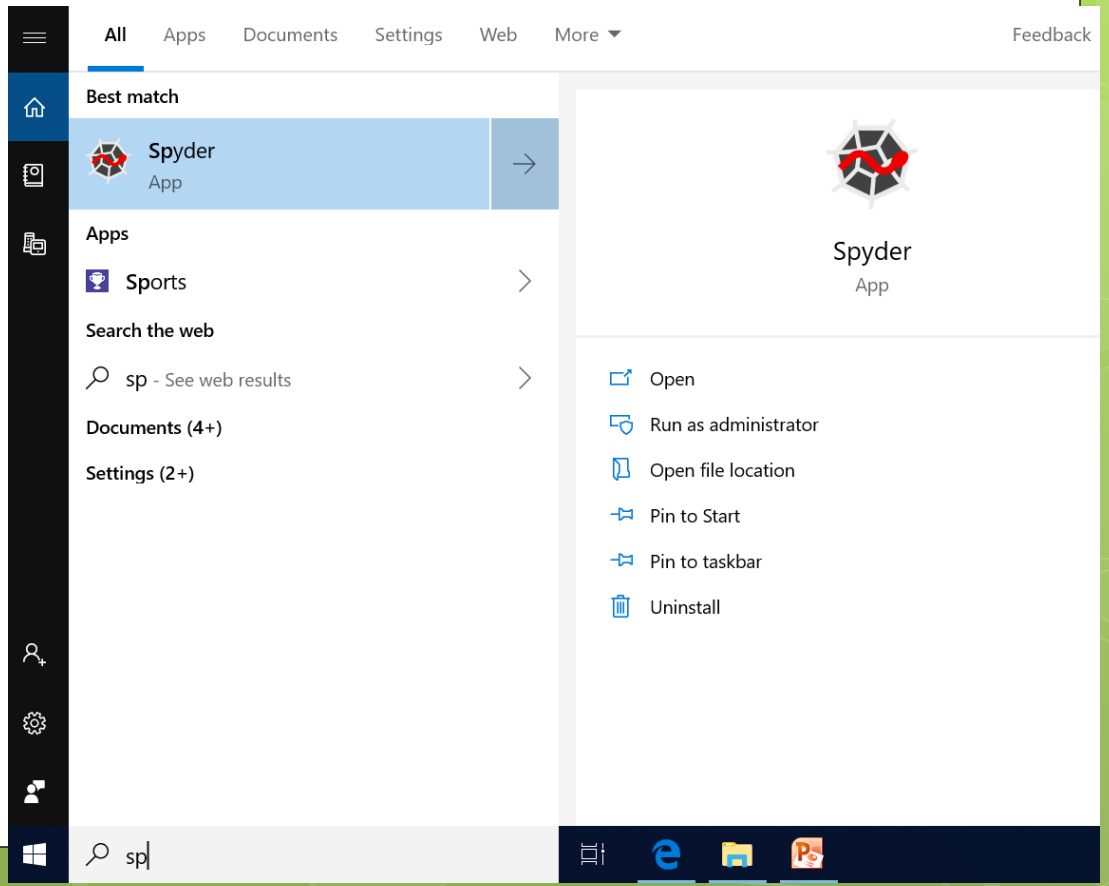
You can develop more interesting games after this summer

Available Python distributions

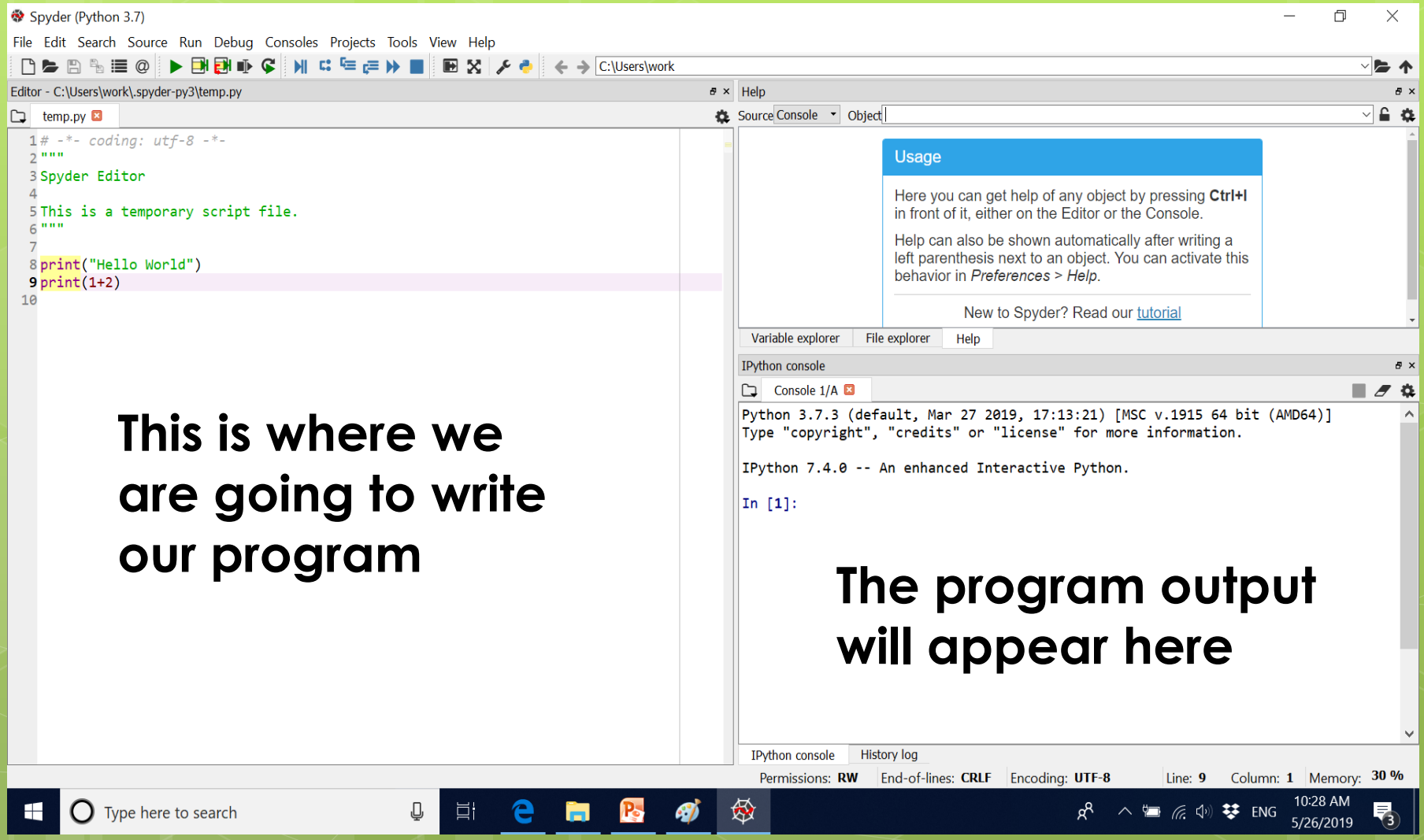
- A Python distribution is a bundle of programs that implement the language behavior.
- A number of free python distributions are available on internet
  - CPython (python.org)
  - Anaconda (anaconda.com)
  - ActivePython (activestate.com)
  - ●●●●●●
- We will use Anaconda distribution in this summer
  - We will also use Spyder IDE (Interface Development Environment) to write, debug and run Python programs (www.spyder-ide.org)

Start Spyder IDE

- At the windows search (the bottom left corner) type “spyder” to find Spyder program
- Click the Spyder icon.
- It will take one or two minutes for the Spyder window to appear



Spyder IDE


Spyder (Python 3.7)
File Edit Search Source Run Debug Consoles Projects Tools View Help
C:\Users\work
Editor - C:\Users\work\.spyder-py3\temp.py
temp.py
1 # -*- coding: utf-8 -*-
2 """
3 Spyder Editor
4
5 This is a temporary script file.
6 """
7
8 print("Hello World")
9 print(1+2)
10
This is where we are going to write our program
Help
Source Console Object
Usage
Here you can get help of any object by pressing Ctrl+I in front of it, either on the Editor or the Console.
Help can also be shown automatically after writing a left parenthesis next to an object. You can activate this behavior in Preferences > Help.
New to Spyder? Read our tutorial
Variable explorer File explorer Help
IPython console
Console 1/A
Python 3.7.3 (default, Mar 27 2019, 17:13:21) [MSC v.1915 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.
IPython 7.4.0 -- An enhanced Interactive Python.
In [1]:
The program output will appear here
IPython console History log
Permissions: RW End-of-lines: CRLF Encoding: UTF-8 Line: 9 Column: 1 Memory: 30 %
Type here to search
ENG
10:28 AM
5/26/2019

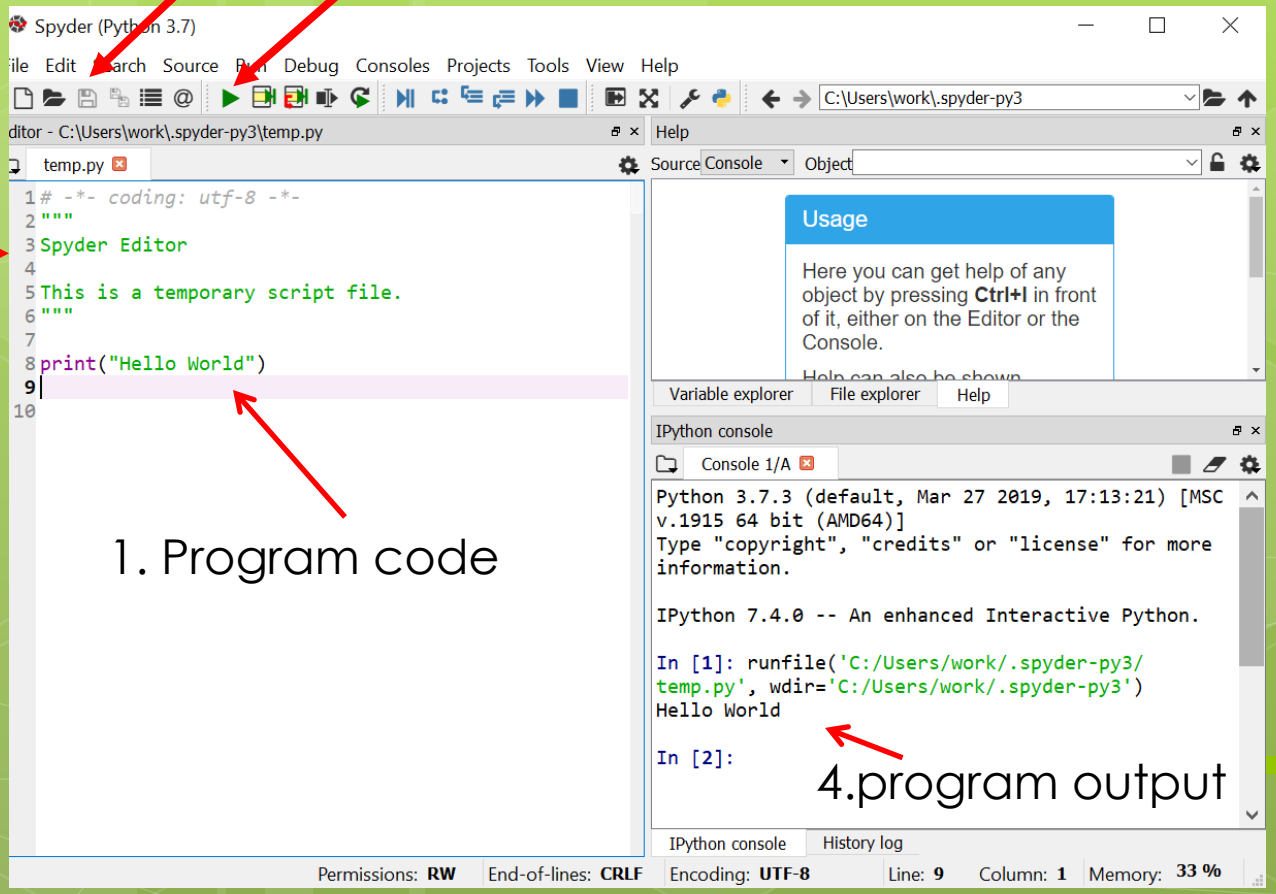
The first Python Program

print("Hello World")

2. Click this icon to save the program into a file

3. Click this icon to run the program

Comments



1. Program code

4.program output

Try Other Programs

```
print("Hello 4H")
print(1+2+3)
```

```
name = input("what is your name? ")
print("Hello",  name)
```

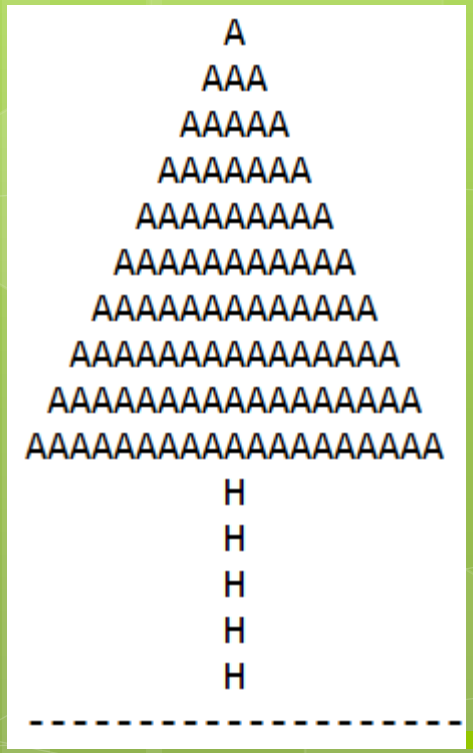
```
# perform multiplication for you
print("This program will perform multiplication x*y")
x = float(input("Please type x value: "))
y = float(input("Please type y value: "))
print("The product of x and y is:")
print(x*y)
```

```
import datetime
date_time = datetime.datetime.now()
date = date_time.date()   # Gives the date
time = date_time.time()   # Gives the time
print("Today is (Year Month Day):")
print(date.year, date.month, date.day)
print("The current time is (Hour Minute Second):" )
print(time.hour, time.minute, time.second)
```

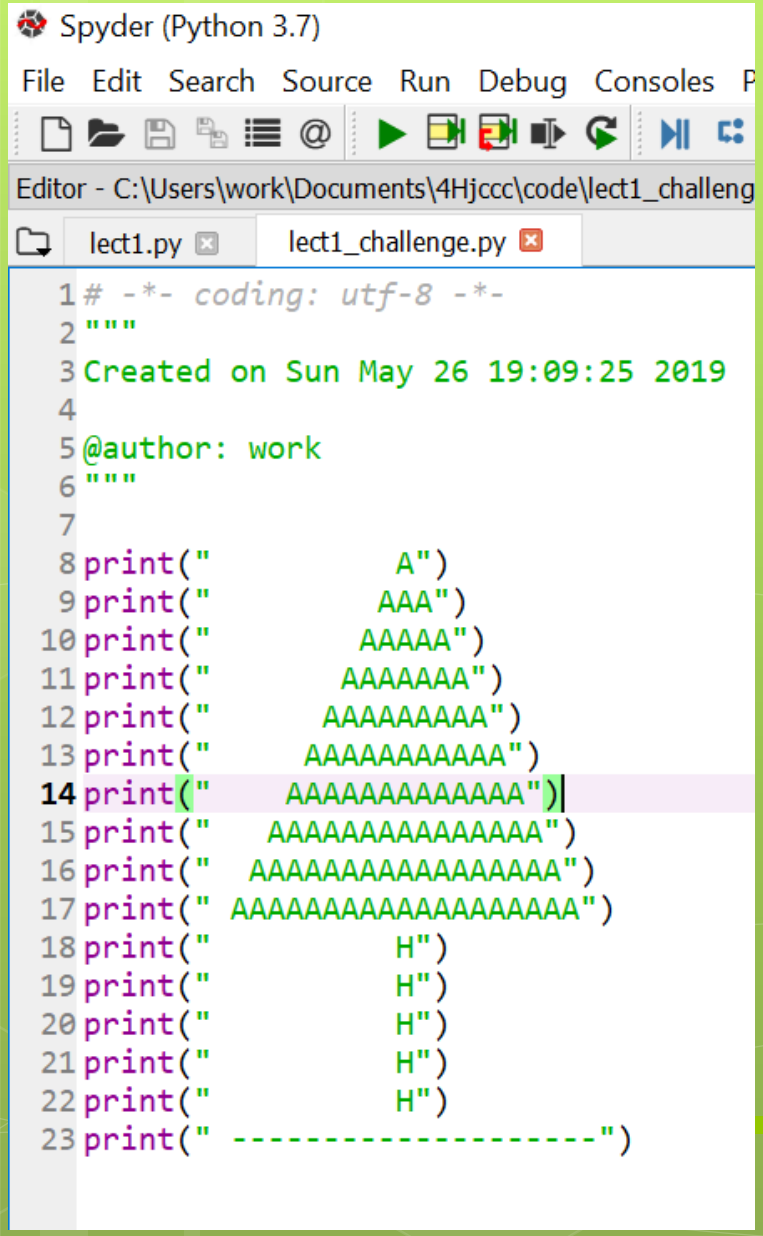
Today's Challenge

Can you write a program to print a tree?

- hint: using print command



Solution:


Spyder (Python 3.7)
File Edit Search Source Run Debug Consoles P
Editor - C:\Users\work\Documents\4Hjccc\code\lect1_challeng
lect1.py
lect1_challenge.py
1 # -*- coding: utf-8 -*-
2 """
3 Created on Sun May 26 19:09:25 2019
4
5 @author: work
6 """
7
8 print("   A")
9 print("   AAA")
10 print("   AAAAA")
11 print("   AAAAAAA")
12 print("   AAAAAAAAA")
13 print("   AAAAAAAAAAA")
14 print("   AAAAAAAAAAAAA")
15 print("   AAAAAAAAAAAAAAA")
16 print(" AAAAAAAAAAAAAAAAA")
17 print(" AAAAAAAAAAAAAAAAAAA")
18 print("   H")
19 print("   H")
20 print("   H")
21 print("   H")
22 print("   H")
23 print(" --------------------")

Online Resources

- There are a number of online tutorials about Python programming language
  - https://www.learnpython.org/