

# 第一章 Python简介

潘蓄林

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### Python 基础

#### Python开发环境

- Python安装
  - 进入Python官方网页 official python;
  - 根据自己的操作系统下载对应的python安装包;
  - 根据提示安装软件;
- Python的 (Integrated Development Environment,IDE)安装
  - Pycharm pycharmPython的最佳伴侣;
  - Vscode Vscode并安装Python的扩展包;
  - anaconda anaconda针对数据科学的集成环境;

#### 熟悉Python开发环境

- 1、在Python的IDE中输入以下语句并运行;

```
print("hello world!")
```

```
## hello world!
```

```
print(u"你好")
```

```
## 你好
```

```
print("你好")
```

```
## 你好
```

```
print("hello again")
```

```
## hello again
```

```
print("my major is data science")
```

```
## my major is data science
```

```
print("data science is applied statistics")
```

```
## data science is applied statistics
```

```
print("big data is a big data")
```

```
## big data is a big data
```

```
print("output chinese need put 'u' ahead the string")
```

```
## output chinese need put 'u' ahead the string
```

```
print("Guido van Rossum created Python language in 1989")
```

```
## Guido van Rossum created Python language in 1989
```

## 2、使用注释：

```
#####  
# 实验报告题目：配置python集成开发环境(IDE);  
# 实验人：潘蓄林;  
#实验时间：2022年9月5日  
#####  
  
# 打印一个字符串  
  
print("Data science is a multidisciplinary course")
```

```
## Data science is a multidisciplinary course
```

```
a = 3  
b = 4  
a,b = b,a #交换a和b的值  
print(a)
```

```
## 4
```

```
print(b)
```

```
## 3
```

## 3、数字和数字计算

```
print("I will count my chickens:")# 我要数数我的鸡 0.0
```

```
## I will count my chickens:
```

```
print("Hens, 母鸡",25+30 / 6)
```

```
## Hens, 母鸡 30.0
```

```
print("Roosters, 公鸡",100-25*3%4)
```

```
## Roosters, 公鸡 97
```

```
print("Now I will count the eggs:现在我要数鸡蛋了:")
```

```
## Now I will count the eggs:现在我要数鸡蛋了:
```

```
print(3 + 2 + 1 - 5 + 4 % 2 - 1 / 4 + 6)
```

```
## 6.75
```

```
print("Is it true that 3 + 2 < 5 - 7?")
```

```
## Is it true that 3 + 2 < 5 - 7?
```

```
print(3 + 2 < 5 - 7)
```

```
## False
```

```
print("What is 3 + 2?",3 + 2)
```

```
## What is 3 + 2? 5
```

```
print("What is 5 - 7?", 5 - 7)
```

```
## What is 5 - 7? -2
```

```
print("How about some more.")
```

```
## How about some more.
```

```
print("Is it greater?", 5 > -2)
```

```
## Is it greater? True
```

```
print("Is it greater or equal?", 5 >= -2)
```

```
## Is it greater or equal? True
```

```
print("Is it less or equal?", 5 <= -2)
```

```
## Is it less or equal? False
```

#### 4、变量

```
cars = 100
drivers = 20
passengers = 90
cars_not_driven = cars - drivers
carpool_capacity = 4 * drivers
average_passengers_per_car = 90 / 20
print("There are", cars, "cars available.")# 这里有 100 辆车可用
```

```
## There are 100 cars available.
```

```

print("There are only", drivers, "drivers available.")# 这里有 20 位司机可用

## There are only 20 drivers available.

print("There will be", cars_not_driven, "empty cars today.")

## There will be 80 empty cars today.

print("We can transport", carpool_capacity, "people today.")# 我们可以运输 人

## We can transport 80 people today.

print("We have", passengers, "to carpool today.")# 我们有 90位乘客

## We have 90 to carpool today.

print("We need to put about", average_passengers_per_car, "in each car.")# 每辆车放多少

## We need to put about 4.5 in each car.

```

## 基本类型及计算

1、假定贷款P元，每个月的利率是i，通过n期的等额还款，计算每个月的还款额R是多少？

$$P = R(1+i)^{-1} + R(1+i)^{-2} + \cdots + R(1+i)^{-n} = R \sum_{j=1}^n (1+i)^{-j}$$

等比数列求和:

$$\sum_{j=1}^n (1+i)^{-j} = \frac{1 - (1+i)^{-n}}{i}$$

求得:

$$R = P \times \frac{i}{1 - (1+i)^{-n}}$$

计算贷款5000元，月利率为5%，一年还完，每个月需还多少钱。

```
p = 5000
i = 0.05
n = 12
R = p*(i/(1-(1+i)**(-n)))
print(R)
```

```
## 564.1270501040767
```

复合数据类型