

Dictionary Comprehension

Dictionary comprehension allows creating dictionary using for loop and test.

Syntax-1: {key:value for variable in iterable}

Syntax-2: {key:value for variable in iterable if test}

Example:

without comprehension

```
dict1={}
```

```
for num in range(1,11):
```

```
    dict1[num]=num**2
```

```
print(dict1)
```

with comprehension

```
dict1={num:num**2 for num in range(1,11)}
```

```
print(dict1)
```

Output:

```
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81, 10: 100}
```

```
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81, 10: 100}
```

Example:

Write a program to create dictionary with n person details and each person is having

name and age

without comprehension

```
n=int(input("Enter how many persons"))
```

```
person={}
```

```
for i in range(n):
```

```
    name=input("Enter Name ")
```

```
    age=int(input("Enter Age"))
```

```
    person[name]=age
```

```
print(person)
```

with comprehension

```
person={input("Enter Name"):int(input("Enter Age")) for i in range(n)}  
print(person)
```

Output:

```
Enter how many persons2  
Enter Name aaa  
Enter Age56  
Enter Name bbb  
Enter Age45  
{'aaa': 56, 'bbb': 45}  
Enter Nameaaa  
Enter Age56  
Enter Namebbb  
Enter Age77  
{'aaa': 56, 'bbb': 77}
```

Example:

```
grade_dict={'naresh':'A',  
            'suresh':'B',  
            'kishore':'C',  
            'ramesh':'A',  
            'kiran':'A',  
            'rajesh':'B'}
```

```
print(grade_dict)
```

```
gradeA={}  
gradeB={}  
gradeC={}  
#without comprehension
```

```
for name,grade in grade_dict.items():  
    if grade=='A':  
        gradeA[name]=grade  
    elif grade=='B':  
        gradeB[name]=grade  
    elif grade=='C':  
        gradeC[name]=grade
```

```
print(gradeA)
```

```
print(gradeB)
print(gradeC)
```

with comprhension

```
gradeA={name:grade for name,grade in grade_dict.items() if grade=='A'}
gradeB={name:grade for name,grade in grade_dict.items() if grade=='B'}
gradeC={name:grade for name,grade in grade_dict.items() if grade=='C'}
```

```
print(gradeA)
print(gradeB)
print(gradeC)
```

Output:

```
{'naresh': 'A', 'suresh': 'B', 'kishore': 'C', 'ramesh': 'A', 'kiran': 'A', 'rajesh': 'B'}
{'naresh': 'A', 'ramesh': 'A', 'kiran': 'A'}
{'suresh': 'B', 'rajesh': 'B'}
{'kishore': 'C'}
{'naresh': 'A', 'ramesh': 'A', 'kiran': 'A'}
{'suresh': 'B', 'rajesh': 'B'}
{'kishore': 'C'}
```

Example:

```
sales={2000:54000,
        2001:45000,
        2002:56000,
        2003:70000,
        2004:65000,
        2005:80000,
        2006:69000,
        2007:25000,
        2008:35000,
        2009:15000}
```

```
print(sales)
sales1={year:s for year,s in sales.items() if s<=50000}
sales2={year:s for year,s in sales.items() if s>50000}
```

```
print(sales1)
print(sales2)
```

Output:

```
{2000: 54000, 2001: 45000, 2002: 56000, 2003: 70000, 2004: 65000, 2005: 80000, 2006: 69000, 2007: 25000, 2008: 35000, 2009: 15000}
{2001: 45000, 2007: 25000, 2008: 35000, 2009: 15000}
{2000: 54000, 2002: 56000, 2003: 70000, 2004: 65000, 2005: 80000, 2006: 69000}
```

What is difference between list,set and dictionary?

List	Set	Dictionary
List is ordered collection	Set is unordered collection	Dictionary is map collection
In list data is organized in sequential order	In set data is organized using hashing data structure	In dict data is organized as key and value pair
List allows duplicates	Set does not allows duplicates	Dictionary allows duplicate value and not allows duplicate keys
List allows any type of object	Set allows only hashable objects	Dictionary keys are hashable and values can be any type
List is created using []	Set is created using {value,}	Dictionary is created using {key:value}
In application development list is used to create group individual objects where duplicates allows and reading and writing is done sequentially and randomly	In application development set is used to group individual objects where duplicates are not allowed and perform math set operations	In application development dictionary is used to group individual objects where data is stored as a key and value pair.

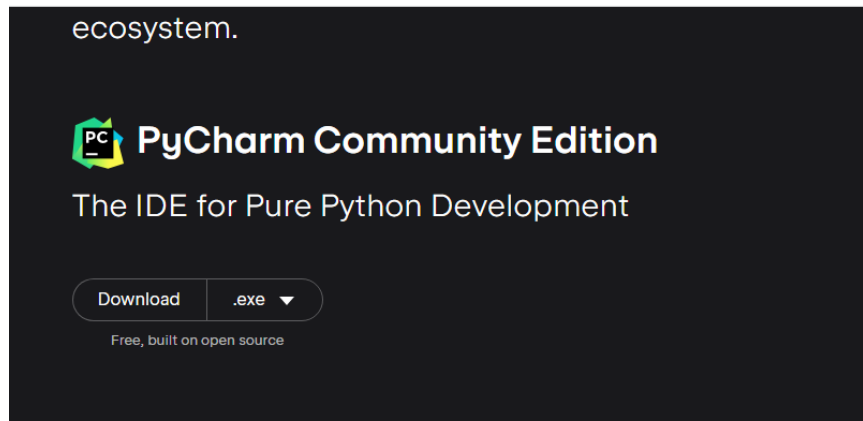
How to work with pycharm?

Pycharm is a python editor or IDE.

Pycharm is used for develop python applications and python web applications.

Pycharm provides a good environment for developing projects.

<https://www.jetbrains.com/pycharm/download/?section=windows>



Functions

What is function?

What is need for functions?

Adv of using functions