

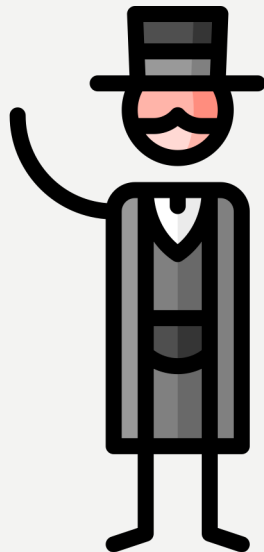
**ASSIGN
SHALLOW COPY
DEEP COPY**

IMAGINE...

Coffee

Bread

Cookies



Milk

Bread

Cookies



ASSIGN

Input

```
# ASSIGN
MikesShoppingList = ["coffee", ["bread", "cookies"]]

MarysShoppingList = MikesShoppingList
MarysShoppingList[0] = "milk"
```

output

```
With assignment, if we replace coffee with milk
Mike's shopping list contains ['milk', ['bread', 'cookies']]
Mary's shopping list contains ['milk', ['bread', 'cookies']]
```



ASSIGN

MikesShoppingList



0 coffee	1
-------------	---



0 bread	1 cookies
------------	--------------

MarysShoppingList



ASSIGN

MikesShoppingList



0 milk	1
-----------	---



0 bread	1 cookies
------------	--------------

MarysShoppingList



SHALLOW COPY

Input

```
MikesShoppingList = ["coffee", ["bread", "cookies"]]
```

```
MarysShoppingList = MikesShoppingList.copy()
```

```
MarysShoppingList[0] = "milk"
```

output

With shallow copy, if we replace coffee with milk

Mike's shopping list contains ['coffee', ['bread', 'cookies']]

Mary's shopping list contains ['milk', ['bread', 'cookies']]

Input

```
MarysShoppingList[1][0] = "cake"
```

output

With shallow copy, if we replace bread with cake

Mike's shopping list contains ['coffee', ['cake', 'cookies']]

Mary's shopping list contains ['milk', ['cake', 'cookies']]



SHALLOW COPY

MikesShoppingList



0 coffee	1
-------------	---



0 bread	1 cookies
------------	--------------



MarysShoppingList



0 coffee	1
-------------	---



SHALLOW COPY

MikesShoppingList



0 coffee	1
-------------	---



0 cake	1 cookies
-----------	--------------



MarysShoppingList



0 milk	1
-----------	---



DEEP COPY

Input

```
from copy import deepcopy
MikesShoppingList = ["coffee", ["bread", "cookies"]]

MarysShoppingList = deepcopy(MikesShoppingList)
MarysShoppingList[0] = "milk"
```

output

With deep copy, if we replace coffee with milk
Mike's shopping list contains ['coffee', ['bread', 'cookies']]
Mary's shopping list contains ['milk', ['bread', 'cookies']]

Input

```
MarysShoppingList[1][0] = "cake"
```

output

With deep copy, if we replace bread with cake
Mike's shopping list contains ['coffee', ['bread', 'cookies']]
Mary's shopping list contains ['milk', ['cake', 'cookies']]



DEEP COPY

MikesShoppingList



0 coffee	1
-------------	---



0 bread	1 cookie s
------------	------------------

MarysShoppingList



0 coffee	1
-------------	---



0 bread	1 cookie s
------------	------------------



DEEP COPY

MikesShoppingList



0 coffee	1
-------------	---



0 bread	1 cookie s
------------	------------------

MarysShoppingList



0 milk	1
-----------	---



0 cake	1 cookie s
-----------	------------------





THANK YOU!