第十一回プログラミング言語 練習問題回答例

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練習問題①

```
a=[]
for i in range(3):
    a.append([])
    for j in range(3):
        if i == j:
            a[i].append(1)
        else:
            a[i].append(0)

print( a )
```

```
a=[]
for i in range(3):
    a.append([])
    for j in range(3):
        if i == (2-j):
            a[i].append(1)
        else:
            a[i].append(0)

print( a )
```

```
>python 11-1-1.py
[[1, 0, 0], [0, 1, 0], [0, 0, 1]]
```

```
>python 11-1-2.py
[[0, 0, 1], [0, 1, 0], [1, 0, 0]]
```

練習問題②

```
a=[]
count=1
for i in range(3):
    a.append([])
    for j in range(3):
        if j == 1:
            a[ i ].append( count )
        else:
            a[ i ].append( 0 )
        count+=1
print( a )
```

```
a=[]
count=1
for i in range(3):
    a.append([])
    for j in range(3):
        if i+j != 2:
            a[ i ].append( count )
        else:
            a[ i ].append( 0 )
        count+=1
print( a )
```

```
>python 11-2-1.py
[[0, 2, 0], [0, 5, 0], [0, 8, 0]]
```

```
>python 11-2-2.py
[[1, 2, 0], [4, 0, 6], [0, 8, 9]]
```

練習問題③

```
a=[
  [ 1 , 2 , 3 ] ,
  [ 4 , 5 , 6 ] ,
  [ 7 , 8 , 9 ] ,
  [ 10 , 11 , 12 ]
]


b = [0]*len(a[0])
for i in range(len(b)):
    b[i]=[0]*len(a)

for i in range(len(a)):
    for j in range(len(a[i])):
        b[j][i]=a[i][j]
```

```
for i in range(len(b)):
    for j in range(len(b[i])):
        print( b[i][j] , end=" " )
    print()
```

```
>python 11-3.py
1  4  7  10
2  5  8  11
3  6  9  12
```

練習問題④（和と差の計算）

```
a = [
    [1,2,3] ,
    [4,5,6] ,
    [7,8,9]
    ]


b=[
    [9,8,7] ,
    [6,5,4] ,
    [3,2,1]
    ]
```

```
c = []
for i in range(len(a)):
    c.append([])
    for j in range(len(a[i])):
        c[i].append(a[i][j]+b[i][j])


d = []
for i in range(len(a)):
    d.append([])
    for j in range(len(a[i])):
        d[i].append(a[i][j]-b[i][j])

print( " c --->¥n" , c )
print( " d --->¥n" , d )
```

練習問題④（積の計算）

```
a = [
    [1,2,3] ,
    [4,5,6] ,
    [7,8,9]
  ]

b=[
    [9,8,7] ,
    [6,5,4] ,
    [3,2,1]
  ]
```

```
e = []
for i in range(len(a)):
    e.append([])
    for k in range(len(a[i])):
        sum = 0
        for j in range(len(b)):
            sum += a[ i ][ j ] * b[ j ][ k ]
        e[ i ].append(sum)

print( " e --->" )
for i in e:
    for j in i:
        print( j , end=" " )
    print()
```

練習問題④

行列の和と差

```
>python 11-4-1.py
c --->
[[10, 10, 10], [10, 10, 10], [10, 10, 10]]
d --->
[[-8, -6, -4], [-2, 0, 2], [4, 6, 8]]
```

行列の積

```
>python 11-4-2.py
e --->
30 24 18
84 69 54
138 114 90
```

練習問題⑤

```python
sentence = []
f = open("HumptyDumpty.txt")
for line in f:
    x = line.strip()
    #print( x )
    sentence.append(x)
f.close()


for i in range(len(sentence)-1,-1,-1):
    print( sentence[i] )
```

```
>python 11-5.py
Couldn't put Humpty together again.
All the king's horses and all the king's men
Humpty Dumpty had a great fall.
Humpty Dumpty sat on a wall.
```