

プログラミング言語

第十二回練習問題回答

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練習問題①

```
p = [  
    [1,70,60,83],  
    [2,43,49,76],  
    [3,59,79,43],  
    [4,67,74,83],  
]  
name= [ "国語", "算数", "英語" ]  
  
for i in range(3):  
    sum = 0  
    for j in range(len(p)):  
        sum += p[ j ][ i+1 ]  
    ave = sum // len(p)  
    print( "{0}の平均点 {1}".format( name[i], ave ) )
```

```
>python 12-1.py  
国語 の平均点 59  
算数 の平均点 65  
英語 の平均点 71
```

練習問題②

```
import math
```

```
p = [  
    [1,70,60,83],  
    [2,43,49,76],  
    [3,59,79,43],  
    [4,67,74,83],  
]
```

```
ave=[]  
for i in range(len(p)):  
    sum = 0  
    for j in range(1,len(p[i])):  
        sum += p[i][j]  
    ave.append( sum // (len(p[i])-1) )
```

平均を求める

```
sd=[]
```

```
for i in range(len(p)):
```

```
    sum = 0
```

```
    for j in range(1,len(p[i])):
```

```
        sum += (ave[i]-p[i][j])*(ave[i]-p[i][j])
```

```
    sd.append( math.sqrt( sum / (len(p[i])-1) ) )
```

平均との差の二乗和

```
for i in range(len(p)):
```

```
    print( "出席番号 {0} の人の平均点は {1},標準偏差は{2}です  
          ".format( p[i][0] , ave[i] , sd[i]) )
```

```
>python 12-2.py
```

出席番号 1 の人の平均点は 71,標準偏差は9.41629792788369です

出席番号 2 の人の平均点は 56,標準偏差は14.352700094407323です

出席番号 3 の人の平均点は 60,標準偏差は14.730919862656235です

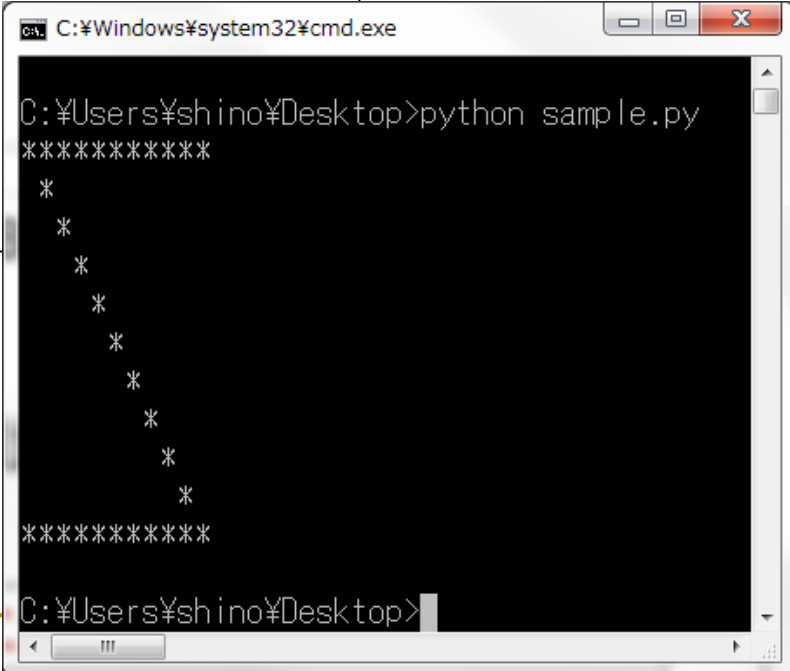
出席番号 4 の人の平均点は 74,標準偏差は6.582805886043833です

練習問題③

```
star = "*"

```

```
for y in range(11):
    for x in range(11):
        if ( y == 0 or y == 10 ) or ( x == y ):
            print( star , end="" )
        else:
            print( end=" " )
    print()
```



```
C:\Windows\system32\cmd.exe
C:\Users\shino\Desktop>python sample.py
*****
*
*
*
*
*
*
*
*
*
*****
C:\Users\shino\Desktop>
```

練習問題④

```
min_x = 0
```

```
min_y = 0
```

```
min_val = 6
```

```
for y in range(-20,21):
```

```
    for x in range(-20,21):
```

```
        xx = x / 10.0
```

```
        yy = y / 10.0
```

```
        z = 2 * xx * xx - 4 * yy * yy + 3 * xx * yy + 6
```

```
        if min_val > z:
```

```
            min_val = z
```

```
            min_x = xx
```

```
            min_y = yy
```

```
print( "xが", min_x , " yが", min_y , "の時, 最小値は", min_val )
```

```
>python 12-4.py
```

xが1.5 yが-2.0の時, 最小値は-14.5

練習問題⑤

```
p = [3,1,4,1,5,9,2,6,5,3,5,8,9,7,9,3,2,3]
print(p)
```

```
for i in range(0,len(p)-1):
    for j in range(len(p)-1,i,-1):
        if p[j]%2==0 and p[j-1]%2!=0:
            work = p[j]
            p[j] = p[j-1]
            p[j-1] = work
```

```
print(p)
```

```
>python 12-5.py
```

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