113 學年度技藝競賽培訓

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113 學年度全國高級中等學校技藝競賽官網

為提升全國高級中等學校學生的技藝學習動機，促進學校間技藝的交流與觀摩，並提升學生技藝水準，檢視學生學習成效及技職教育成果，每年 11 月舉辦的全國高級中等學校學生技藝競賽，統計 110 學年度五大類競賽職種，分別有工業類 28 項、商業類 11 項、農業類 9 項、家事類 8 項、海車水產類 7 項。旨在強化學生的學習動機，促進技藝交流與觀摩，並提升技藝水準。

統計 113 學年度商業類競賽職種 (A) 平面設計、(B) 網頁設計、(C) 程式設計、(D) 文書處理、(E) 電腦繪圖、(F) 會計資訊、(G) 商業簡報、(H) 職場英文，八項競賽項目，計有 137 所學校、511 位學生參與競賽。

112 術科重點

> Question 328
>
> Problem A
>   二數有權重的相加-(單列)

ⓘ Info:
    送分題

```
a,b = map(int,input().split())
print(4*a+6*b)
```

Problem B
　　剪刀石頭布單行版

ⓘ
Info:
　　送分題

```
1  a,b = input().split()
2
3  if a=='Y' and b=='X' or a=='X' and b=='O' or a=='O' and b=='Y':
4      print(1)
5  elif a==b:
6      print(0)
7  else:
8      print(2)
```

Problem C
    閏年

Info:
    送分題

```
1 y=int(input())+1911
2
3 if   y%400 == 0 or y%4 == 0 and y%100:
4     print('True')
5 else:
6     print('False')
```

Problem D
　　ASCII 碼

Info:
　　簡單題

```
1 n = int(input())
2 if 65 <= n <= 90:
3     print(1)
4 elif 97 <= n <=122:
5     print(2)
6 else:
7     print(0)
```

Problem E
2 的冪

Info:
簡單題

```python
n = int(input())
for i in range(100000000):
    la = pow(2,i)
    if la == n:
        print(2**i)
        break
    elif la > n:
        print(2**(i-1))
        break
```

Info: 運用 $log_2(n)$ 解法，效率較高，但是需要引入 math 模組

```python
import math
n = int(input())
print(2**int(math.log2(n)))
```

Problem F
　質因數分解

Info:
　基礎數學題

```
 1 n = int(input())
 2 ans = []
 3 while n>1:
 4     for i in range(2,n+1):
 5         if n%i == 0:
 6             ans.append(i)
 7             n//=i
 8             break
 9
10 print(*ans)
```

Problem G
   因數加總

Info:

   簡單題

```python
n = int(input())
ans = 0

for i in range(1,n+1):
    if n%i == 0:
        ans += i

print(ans)
```

Problem H
數字運算 (減 1 或除以 10)

Info:
基礎數學題

```
n,k = map(int,input().split())

for i in range(k):
    if n%10 == 0:
        n//=10
    else:
        n -= 1

print(n)
```

Question 336

Problem I
　數字相加

ℹ️ Info:

```
1  for _ in range(int(input())):
2  n = int(input())
3  A = list(map(int,input().split()))
4  q = []
5  tar = A.pop()
6  for i in range(n-1):
7      if tar - A[i] in q:
8          print('YES')
9          break
10     else:
11         q.append(A[i])
12 else:
13     print('NO')
```

Problem J
   七段顯示器

Info:

```
1 for _ in range(int(input())):
2 n = int(input())
3 ans = '1' * (n//2)
4 if n%2:
5     ans = '7' + ans[1:]
6 print(ans)
```

Problem K
字串

Info:

```python
for _ in range(int(input())):
n = int(input())
ans = set()
S = list(input())
for i in range(n-1):
    new = S[:]
    new[i] = ''
    new[i+1] = ''
    s = ''.join(new)
    ans.add(s)

print(len(ans))
```

Problem K2
　字串

Info: 此題為 Problem K 的進階考題，有時間限制，屬於另一種解法, 但是效率較高

```python
for _ in range(int(input())):
    n = int(input())
    ans = set()
    S = list(input())
    ans = n - 1
    # 1
    i = 0
    while i < len(S)-1:
        curr = 1
        j = i + 1
        while j < len(S):
            if S[j] == S[i]:
                curr += 1
            else:
                ans -= max(0,curr - 2)
                i = j-1
                break
            j += 1
        else:
            ans -= max(0,curr - 2)
            i = j
        i += 1

    # 2
    for i in range(2,len(S)):
        if S[i] == S[i-2] and S[i] != S[i-1]:
            ans -= 1

    print(ans)
```

Problem L
    中位數

Info:

```
1  A = []
2  for i in range(int(input())):
3      A.append(int(input()))
4      n = len(A)//2
5      A.sort()
6      if len(A)%2 ==1:
7          print(A[len(A)//2])
8      else:
9          print((A[n]+A[n-1])//2)
```

Problem M
　分組

ⓘ
Info:

```
1  for _ in range(int(input())):
2  n,x = map(int,input().split())
3  A = list(map(int,input().split()))
4  A.sort(reverse=True)
5  ans = 0
6  p = 1
7  i = 0
8  while i < len(A):
9      if A[i] * p >= x:
10         ans += 1
11         i += p
12     else:
13         p += 1
14         i += 1
15 print(ans)
```

Problem N
　函數

Info:

```
1 n = int(input())
2
3 if n%2 == 0:
4     print(n//2)
5 else:
6     print(n//2-n)
```

Problem O
洗牌

Info:

```
 1 n,m = map(int,input().split())
 2
 3 A = list(map(int,input().split()))
 4 for i in range(m):
 5     new = []
 6     a = A[:n//2]
 7     b = A[n//2:]
 8     for i in range(len(a)):
 9         new.append(a[i])
10         new.append(b[i])
11     A = new[:]
12
13 print(*A)
```

Problem P
魔術方陣

ℹ Info:

```
 1 A = []
 2 total = 0
 3 for i in range(3):
 4     arr = list(map(int,input().split()))
 5     total += sum(arr)
 6     A.append(arr)
 7
 8 total //= 2
 9 A[0][0] = total-A[1][0]-A[2][0]
10 A[1][1] = total-A[0][1]-A[2][1]
11 A[2][2] = total-A[0][2]-A[1][2]
12 for i in A:
13     print(*i)
14
15 '''
16 0 1 6
17 3 0 7
18 4 9 0
19 '''
```

Question 345

Problem Q
　　數字全部相加成本

ℹ

Info:

```
 1 while 1:
 2 n = int(input())
 3 if not n:
 4     break
 5 A = list(map(int,input().split()))
 6 ans = 0
 7 while len(A)>1:
 8     A.sort()
 9     A[0] += A[1]
10     ans += A[0]
11     A.pop(1)
12 print(ans)
```

Problem R
　　樹的直徑

ℹ

Info:

```python
graph = {}
n = int(input())
for _ in range(n-1):
    a,b = map(int,input().split())
    if a not in graph:
        graph[a] = [b]
    else:
        graph[a].append(b)
    if b not in graph:
        graph[b] = [a]
    else:
        graph[b].append(a)

dis_1to = [-1] * (n+1)
dis_1to[1] = 0
que = [1]
head = 0
while head<len(que):
    node = que[head]
    head += 1
    for v in graph[node]:
        if dis_1to[v] == -1:
            dis_1to[v] = dis_1to[node]+1
            que.append(v)

i = dis_1to.index(max(dis_1to))

dis_ito = [-1] * (n+1)
dis_ito[i] = 0
que = [i]
head = 0
while head<len(que):
    node = que[head]
    head += 1
    for v in graph[node]:
        if dis_ito[v] == -1:
            dis_ito[v] = dis_ito[node]+1
            que.append(v)

print(max(dis_ito))
```

Problem S
迴圈

ℹ Info:

```
1  n,m = map(int,input().split())
2
3  graph = {i:[] for i in range(1,n+1)}
4  visited = []
5  for i in range(m):
6      a,b = map(int,input().split())
7      graph[a].append(b)
8      graph[b].append(a)
9
10 ans = 0
11 for i in range(1,n+1):
12     if i not in visited:
13         arr = []
14         que = [i]
15         head = 0
16         while head<len(que):
17             node = que[head]
18             head += 1
19             for v in graph[node]:
20                 if v not in visited:
21                     visited.append(v)
22                     que.append(v)
23                     arr.append(v)
24         if arr and all(len(graph[num]) == 2 for num in arr):
25             ans += 1
26             # print(arr)
27
28 print(ans)
29
30 '''
31 5 4
32 1 2
33 3 4
34 5 4
35 3 5
36 '''
```