

# 113 學年度技藝競賽培訓

Ching-Chang Lin  
cclin@ba.tpcu.edu.tw

Taipei City University of Science and Technology — November 3, 2024

## 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)

i

#### Info:

送分題

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

### Question 329

#### Problem B

剪刀石頭布單行版

i

#### 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)
```

### Question 330

#### Problem C

閏年

**i**

#### 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')
```

### Question 331

#### Problem D ASCII 碼

**i**

#### 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)
```

### Question 332

#### Problem E 2 的幂

i

#### Info:

簡單題

```
1 n = int(input())
2 for i in range(100000000):
3     la = pow(2,i)
4     if la == n:
5         print(2**i)
6         break
7     elif la > n:
8         print(2**(i-1))
9         break
```

### Question 333

#### Problem F

質因數分解

i

#### 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)
```

### Question 334

#### Problem G

因數加總

**i**

#### Info:

簡單題

```
1 n = int(input())
2 ans = 0
3
4 for i in range(1,n+1):
5     if n%i == 0:
6         ans += i
7
8 print(ans)
```

### Question 335

#### Problem H

數字運算 (減 1 或除以 10)

**i**

#### Info:

基礎數學題

```
1 n,k = map(int,input().split())
2
3 for i in range(k):
4     if n%10 == 0:
5         n//=10
6     else:
7         n -= 1
8
9 print(n)
```



### Question 336

#### Problem I

數字相加

**i**

#### 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')
```

### Question 337

#### Problem J

七段顯示器

**i**

#### 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)
```

### Question 338

#### Problem K 字串

**i**

#### Info:

```
1 for _ in range(int(input())):
2     n = int(input())
3     ans = set()
4     S = list(input())
5     for i in range(n-1):
6         new = S[:]
7         new[i] = ''
8         new[i+1] = ''
9         s = ''.join(new)
10        ans.add(s)
11
12 print(len(ans))
```

### Question 339

#### Problem K2

字串

**i**

**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

```
1 for _ in range(int(input())):
2     n = int(input())
3     ans = set()
4     S = list(input())
5     ans = n - 1
6     # 1
7     i = 0
8     while i < len(S)-1:
9         curr = 1
10        j = i + 1
11        while j < len(S):
12            if S[j] == S[i]:
13                curr += 1
14            else:
15                ans -= max(0, curr - 2)
16                i = j-1
17                break
18            j += 1
19        else:
20            ans -= max(0, curr - 2)
21            i = j
22        i += 1
23
24    # 2
25    for i in range(2, len(S)):
26        if S[i] == S[i-2] and S[i] != S[i-1]:
27            ans -= 1
28
29    print(ans)
```

### Question 340

Problem L

中位數

**i**

**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)
```

### Question 341

#### Problem M

分組

**i**

#### 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)
```

### Question 342

Problem N

函數

**i**

**Info:**

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

### Question 343

#### Problem O

洗牌

**i**

#### 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)
```



### Question 344

#### 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)
```

### Question 346

#### Problem R

樹的直徑

**i**

#### Info:

```
1 graph = {}
2 n = int(input())
3 for _ in range(n-1):
4     a,b = map(int,input().split())
5     if a not in graph:
6         graph[a] = [b]
7     else:
8         graph[a].append(b)
9     if b not in graph:
10        graph[b] = [a]
11    else:
12        graph[b].append(a)
13
14 dis_1to = [-1] * (n+1)
15 dis_1to[1] = 0
16 que = [1]
17 head = 0
18 while head<len(que):
19     node = que[head]
20     head += 1
21     for v in graph[node]:
22         if dis_1to[v] == -1:
23             dis_1to[v] = dis_1to[node]+1
24             que.append(v)
25
26 i = dis_1to.index(max(dis_1to))
27
28 dis_ito = [-1] * (n+1)
29 dis_ito[i] = 0
30 que = [i]
31 head = 0
32 while head<len(que):
33     node = que[head]
34     head += 1
35     for v in graph[node]:
36         if dis_ito[v] == -1:
37             dis_ito[v] = dis_ito[node]+1
38             que.append(v)
39
40 print(max(dis_ito))
```

## Question 347

### 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 '''

```