計算機程式 111 學年度第 1 學期小考 1 試題

系級：＿＿＿＿ 學號：＿＿＿＿＿＿ 姓名：＿＿＿＿

1. (1) 需求分析、系統分析、系統設計、程式碼撰寫、系統驗證
   請寫出資訊系統開發流程的五個主要步驟。
   (Please list 5 major steps of information system development procrss)

2. (1) <u>1 asm, 2 python, 3 Java, 3 iOS, 5 C#,</u>
   以下程式，輸出為何? (What is the output?)

```
01  def forOps():
02    i = 1
03    myList = ["asm", "python", "C++", "Java", "iOS", "perl",
04  "C#"]
05    for index in myList :
06      if (index == "Java"):
07        print(i,index, end=', ')
08      elif (index == "python"):
09        print(i, index, end=', ')
10      elif (i%2!=0):
11        print(i, index, end=', ')
12        i = i+1
13      else:
14        i=i+1
    forOps()
```

(2) <u>4-5-7-8-4-5-7-9-12-13-4-5-6-4-5-7-9-10-11-4-5-7-9-12-13-4-5-7-9-10-11</u>
   寫下執行編號順序(Please write the executing sequence number for
   14-1-2-3-4-5-7-9-10-11-＿＿＿＿＿＿ (2) ＿＿＿＿＿＿

(3) 劃出流程圖(Draw the flow chart)

3. (1) <u>cbf</u> (2) <u>circle</u> (3) <u>square</u>
   以下程式使用Callback function來計算不同種類圖形(圓形、正方形)的面積，執行結果為 12, 9。
   (The following program uses callback function to compute area of different shapes, the result is "12, 9", please complete the empty spaces.)
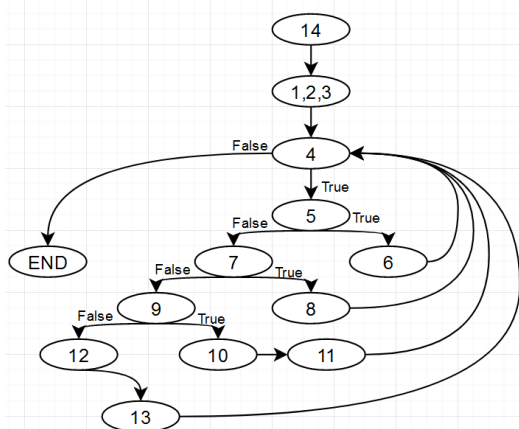
```
01  import math
02  def computeArea(___(1)___, p):
03    return cbf(p)
04
05  def square(data):
06    return (data*data)
07
08  def circle(data):
09    return (math.pi*data*data)
10
11  print('%d' %computeArea(_(2)_, 2))
12  print('%d' %computeArea(_(3)_, 3))
```

4. (1) <u>循序</u> (2) <u>選擇</u> (3) <u>重複</u>
   請寫出 Python 三種不同程式執行流程
   (Please write three kinds of program executing flows.)

5. A, B兩位玩家各有三張撲克牌，雙方比較撲克牌總點數的大小，A代表1點，2~10點代表2~10點，J、Q、K代表0.5點。若總點數 > 10.5，則總點數為0點。若A獲勝，輸出a win，若B獲勝，輸出b win，若平手，輸出tie。請完成空格內的程式碼
   (There are two players A and B, both getting three cards, comparing whose points are bigger than the other. For the card points, A equals one point, 2 to 10 equals 2 to 10 points, and for J, Q, and K are 0.5 point, if the total point of single player gets over 10.5, then the player gets zero point. For the result, if player A wins, print out "a win", if B wins then print out "b win", if tie, print out "tie", please complete the following empty spaces.)

(1) <u>points[index]</u> (2) <u>transferPoint</u>

(3) <u>sum > 10.5</u> (4) <u>B[0],B[1],B[2]</u>

```
01  def transferPoint(card):
02    pork = ['A', '2', '3', '4', '5', '6', '7', '8', '9', '10', 'J', 'Q', 'K']
03    points =[1,2,3,4,5,6,7,8,9,10,0.5, 0.5,0.5]
04    index = pork.index(card)
05    return ____(1)_____
06
07  def getSum(x,y,z):
08    x_pt = ____(2)____(x)
09    y_pt = ____(2)____(y)
10    z_pt = ____(2)____(z)
11    sum = x_pt + y_pt + z_pt
12    if ___(3)_____:
13      return 0
14    else:
15      return sum
16
17  def compare(a,b):
18    if a>b:
19      print('a win')
20    elif a<b:
21      print('b win')
22    else:
23      print('tie')
24
25  def main():
26    A = ['A','7','10']
27    B = ['2','3','5']
28    a_pt = getSum(A[0],A[1],A[2])
29    b_pt = getSum(_____(4)_____)
30    compare(a_pt, b_pt)
31
32  main()
```

6. (1) _ZeroDivisionError_ (2) <u>else</u> (3) <u>finally</u>
   使用 try, except, else, finally，完成以下程式碼
   輸入兩個數，若第二個數字是0，輸出 "Division zero"，若兩數可以相除則輸出相除的結果，最後一定要輸出 "OK"。
   (Use try, except, else, finally to complete following program. The program accepts two number, if the second number is zero, output "Division zero", if two numbers are able to divide, output the result, at the end, the program must output "OK")

```
01  def Ops(num1, num2):
02    try:
03      answer = num1/num2
04    except_____:          #(1)
05      print('Division zero')
06    _____:            #(2)
07      print(answer)
08    _____:            #(3)
09      print('OK')
10  num1 = int(input())
11  num2 = int(input())
12  Ops(num1, num2)
```

7. (1)＿＿＿＿＿(2)＿＿＿＿＿(3) ＿＿＿＿＿

請列出任三種 Python 變數的資料型態。
(Please list 3 kinds of "data type" in Python)
整數、浮點數、複數、字串、序列、串列、集合、
字典、布林

8. (1)＿＿=3＿＿ (2) ＿＿height=2＿＿

以下程式執行結果為 30, 60，請完成以下程式碼
(The result of following program is 30, 60. Please complete
the empty spaces.)

```
01  def get_area(length, width___,____): #(1) (2)
02      return length*width*height
03
04  print(get_area(5))
05  print(get_area(5,6))
```

9. (1) ＿＿＿＿＿y=3x-2＿＿＿＿＿

以下程式，輸出為何? (What is the output?)

```
01   def getEq (x1, y1, x2, y2):
02       m1 = y1-y2
03       m2 = x1-x2
04       b1 = x2*y1-x1*y2
05       b2 = x2-x1
06       return m1, m2, b1, b2
07
08   def equation(x1, y1, x2, y2):
09       m = b = m1 = m2 = b1 = b2 =0
10       if (x1==x2) and (y1==y2): print('ERROR')
11       if (x1==x2): print('x=%d' %x1, end='')
12       elif (y1==y2): print('y=%d' %y1, end='')
13       else:
14          m1, m2, b1, b2 = getEq(x1, y1, x2, y2)
15          print('y=', end='')
16          if (m1<0) and (m2<0):
17             m1=-m1
18             m2=-m2
19          if m1==m2: print('', end='')
20          elif m1==(-m2):print('-',end='')
21          elif m1%m2==0:
22             m=m1/m2;
23             print('%d' %m        , end='')
24          else: print('%d/%d' %(m1, m2), end='')
25          print('x', end='')
26          if (b1!=0):
27             if (b1*b2>0):print('+',end='')
28             if (b1%b2==0):print('%d' %(b1/b2),end='')
29             else: print('%d/%d' %(b1, b2), end='')
30       print('')
31
32   equation(1, 1, 2, 4)
```
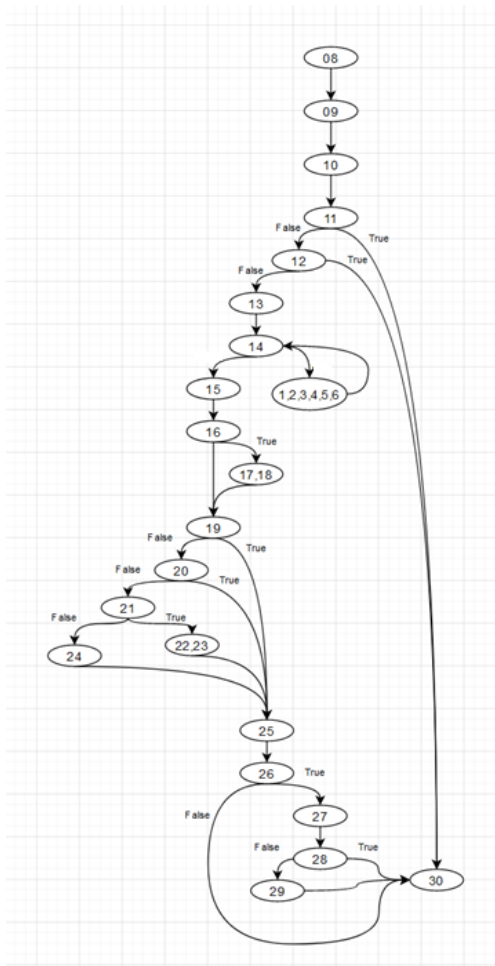
(2) ＿＿＿04-05-06-14-15-16＿＿＿

請寫出 equation(1, 1, 2, 4)執行編號順序(填空 6 個數字)。
(Write the executing sequence number for equation(1, 1, 2,
4).)
08-09-10-11-12-13-14-01-02-03-＿＿＿＿(2)＿＿＿＿-17-18-
19-20-21-22-23-25-26-27-28-30

(3) 請畫出equation()的流程圖。(Draw the flow chart of the
equation().)

10. (1) Hello@John,## (2)＿＿＿n＿＿＿ (3) ＿＿Tkh@f＿＿

(4)＿＿nJn@@＿＿ (5)＿＿am@fine＿＿ (6) ＿＿fine＿＿

以下程式，輸出為何? (What is the output?)

```
01   def test02():
02       A = 'Thank#John@I@am@fine'
03       B = 'Hello@John'
04       C = B + ',' + A[5]*2
05       print(C)              #1
06       print(B[-1])          #2
07       print(A[::4])         #3
08       print(A[3:-3:3])      #4
09       A_len = len(A)
10       print(A[-7::])        #5
11       B = A.split('@')
12       print(B[3])           #6
13
14   test02()
```

11.(1) weight / ((height) **2) (2) ＿＿＿＿＿BMI < 18.5＿＿＿＿＿

(3) ＿＿＿BMI > 24＿＿＿ (4) ＿＿% (name, BMI)＿＿

完成設計計算BMI 值的Python 程式

BMI 值計算公式:BMI = 體重(公斤)/身高^2(公尺^2)，例如：
一個 52 公斤的人，身高是 155 公分，則 BMI 為 :52(公
斤)/1.55^2 (公尺^2)＝21.6。正常範圍為 BMI=18.5～24(含18.5
與 24)。請設計一個 function，從鍵盤輸入姓名 name、身高、
體重。當 BMI 太大，輸出 Hi name, BMI: x.xx tooHIGH。當
BMI 太小，輸出 Hi name, BMI: x.xx too LOW。
(Please complete the following program: BMI calculation
formula: BMI = weight(kg)/height^2(meter^2), e.g. A 52 kg
person with 155cm of height, the BMI evaluates to 52/(1.55^2)
=21.6. The normal range of BMI is 18.5~24(includes 18.5 and
24). Please design a function that enter the name, height and
weight from keyboard. If BMI is too large, print out "Hi {name},
BMI:{bmi, two decimal} too HIGH", if BMI is too low, print out
"Hi {name}, BMI:{bmi, two decimal} too LOW")

```
01   def health ():
02       name = input()
03       weight = float(input())
04       height = float(input())
05       BMI = _____(1)_____
06       if_____(2)_____ :
07          print ("Hi %s, BMI : %.2f too LOW" % (name, BMI))
08       elif_____(3)_____ :
09          print ("Hi %s, BMI : %.2f too HIGH" _____(4)_____ )
10
```

12. 設計 Code 印出以下圖形，須使用 Function，每一個 Function 只能使用一層 for loop。輸入 n 畫出 n 層圖形，例如輸入4

(Please design python code to print out the following diagram, you must use function in your code. Every function can only contain at most one level of for loop. Enter n to print n level diagram, e.g. input 4, show:)

```
###0
##10
#210
3210
```

Ans:

```
1    def f1(n):
2        for i in range(n-1):
3            print('#', end='')
4
5    def f2(n):
6        for i in range(n,-1,-1):
7            print( i , end='')
8
9    def main():
10       num = int(input())
11       for i in range(num, 0, -1):
12           f1(i)
13           f2(num-i)
14           print()
15   main()
16
17
```

13. 請寫下至少 30 個字，如何學好程式設計。(5%)
(Please write at least 30 words that how to learn programming well.)