考試科目	計算机概論	所別	資管系 管理系統組 微積分組	考試時間 4161 4162	3月7日(日)第1節

壹、 是非題 (10%)

1. A queue exhibits LIFO behavior.
2. The bubble sort algorithm involves finding the smallest item in the unsorted portion of the array and swapping it with the current item.
3. A stack and a queue are different versions of the same abstract data type.
4. A binary search cannot be applied to an unsorted list.
5. The selection sort algorithm involves finding the smallest item in the unsorted portion of the array and swapping it with the current item.

貳、 選擇題 (21%)

1. Which paradigm most accurately describes Java?
   (A) Imperative or procedural
   (B) Functional
   (C) Logic
   (D) Object oriented
   (E) procedural language with some object-oriented features
   (F) Object oriented language with some procedural features
2. What is used to translate a program in COBOL?
   (A) Interpreter
   (B) Assembler
   (C) Compiler
   (D) Machine Code
3. What executes the Java Virtual Machine?
   (A) Interpreter
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4. What translates a Java program into Bytecode?
   (A) Interpreter
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5. Which paradigm most accurately describes BASIC?
   (A) Imperative or procedural
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考試科目	計算机概論	所別	資管系 管理系統組 資管系 微積分組	考試時間 4161 4162	3月7日(日)第1節

6. What takes input in a high-level language and directs the computer to perform the actions specified in each statement?
   (A) Interpreter
   (B) Assembler
   (C) Compiler
   (D) Machine Code

7. Which paradigm most accurately describes C++?
   (A) Imperative or procedural
   (B) Functional
   (C) Logic
   (D) Object oriented
   (E) procedural language with some object-oriented features
   (F) Object oriented language with some procedural features

參、 問答題

For Questions 1-2 use the following list of values.

Length list

11

[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
29	45	60	20	3	70	10	30	15	35	89

1. Show the state of the list when current is first set equal to the fifth item in the bubble sort algorithm. **(10%)**

[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]

2. Show the state of the list when the first recursive call is made in Quicksort using list[0] as the split value. **(10%)**

[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]

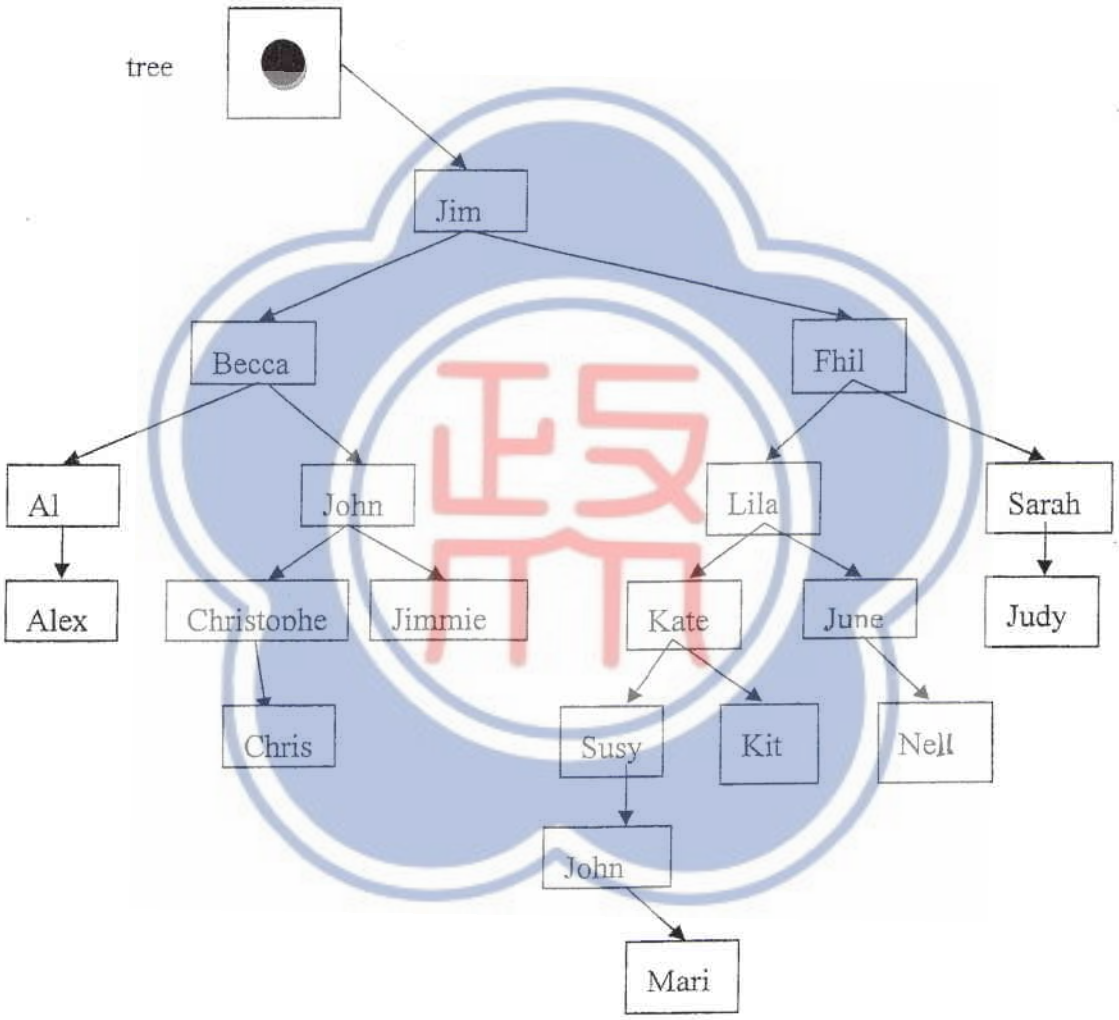
3. Fill the power of 2 and the power of 10 to its name. **(6%)**

name	Answer
Example: Kilo	2^{10} and 10^{3}
Giga	
Tera	
Mega	

備註	試題隨卷繳交

考試科目	計算机概論	所別	資管系 管理統計組 4161 資管系 微積分組 4162	考試時間	7月7日(日)第1節

For 4-6, use the following tree.



4. Name the content of the nodes that are the ancestors of the node containing Kit. **(7%)**
5. Name the content of each of the leaf nodes. **(7%)**
6. What is the height of the tree? **(4%)**

備註	試題隨卷繳交

考試科目	計算机概論	所別	資管系管理系統組 資管系微積組	4161 考試時間	3月7日(日)第1節

7. Show what is written by the following code. **(25%)**

```
#include <iostream>
#include <vector>
using namespace std;

int parti(int * b, int b1, int b2)
{ int i = b1-1, j = b2; int v = b[b2];
 for (;;)
  { while (b[++i] < v && i < b2);
    while (v < b[--j] && j > b1) if (j == b1) break;
    if (i >= j) break;
    int temp = b[i];
    b[i] = b[j];
    b[j] = temp;
  }
int temp = b[i];
b[i] = b[b2];
b[b2] = temp;
return i;
}

void quick(int* array, int a1, int a2)
{ int i;
 if (a2 <= a1) return;
 i = parti(array, a1, a2);
 cout << array[i] << "\n";
 quick(array, i+1, a2);
 quick(array, a1, i-1);
}

int main()
{int ia[11] = {10, 32, 3, 16, 38, 36, 22, 28, 26, 21, 19};
 quick(ia, 0, 10);
 return 0;
}
```

國立政治大學　99　學年度研究所 博(碩) 士班招生考試試題

考試科目	管理資訊系統	所別	資訊管理學系 管理資訊系統組 4161	考試時間	3 月 7 日(日) 第 三 節

請回答下列問題，每題 20 分，共五題 100 分

1.有兩種資訊系統設計與建模的方法，分別為結構化方法與物件導向方法，比較這兩種不同的系統建模方法所適用的環境與各自的特色。

2.說明何謂 IT 治理？IT 治理與 IT 管理有何差異？以及為何需要 IT 治理？

3.說明決策支援系統(DSS)與管理資訊系統(MIS)在系統開發與應用方面有何不同，以及它如何在企業上提供價值。

4.評估雲端運算在商業活動中扮演的角色，並描述最重要的雲端運算應用。

5.企業在考慮"購買"還是"開發"資訊應用系統與服務時，往往陷入困難，請說明開發與購買決策考慮的有關因素，並就各因素說明企業應採取購買還是開發的原因。

備註	試題隨卷繳交

考試科目	計算机概論	所別	資管系 管理系統組 微積分組	考試時間 4161 4162	2月7日(日)第1節

壹、 是非題 (10%)

1. A queue exhibits LIFO behavior.
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3. A stack and a queue are different versions of the same abstract data type.
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考試科目	計算机概論	所別	資管系管理系統組 資管系微積分組	考試時間	3月7日(日)第1節
			4161 4162		

6. What takes input in a high-level language and directs the computer to perform the actions specified in each statement?
   (A) Interpreter
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7. Which paradigm most accurately describes C++?
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name	Answer
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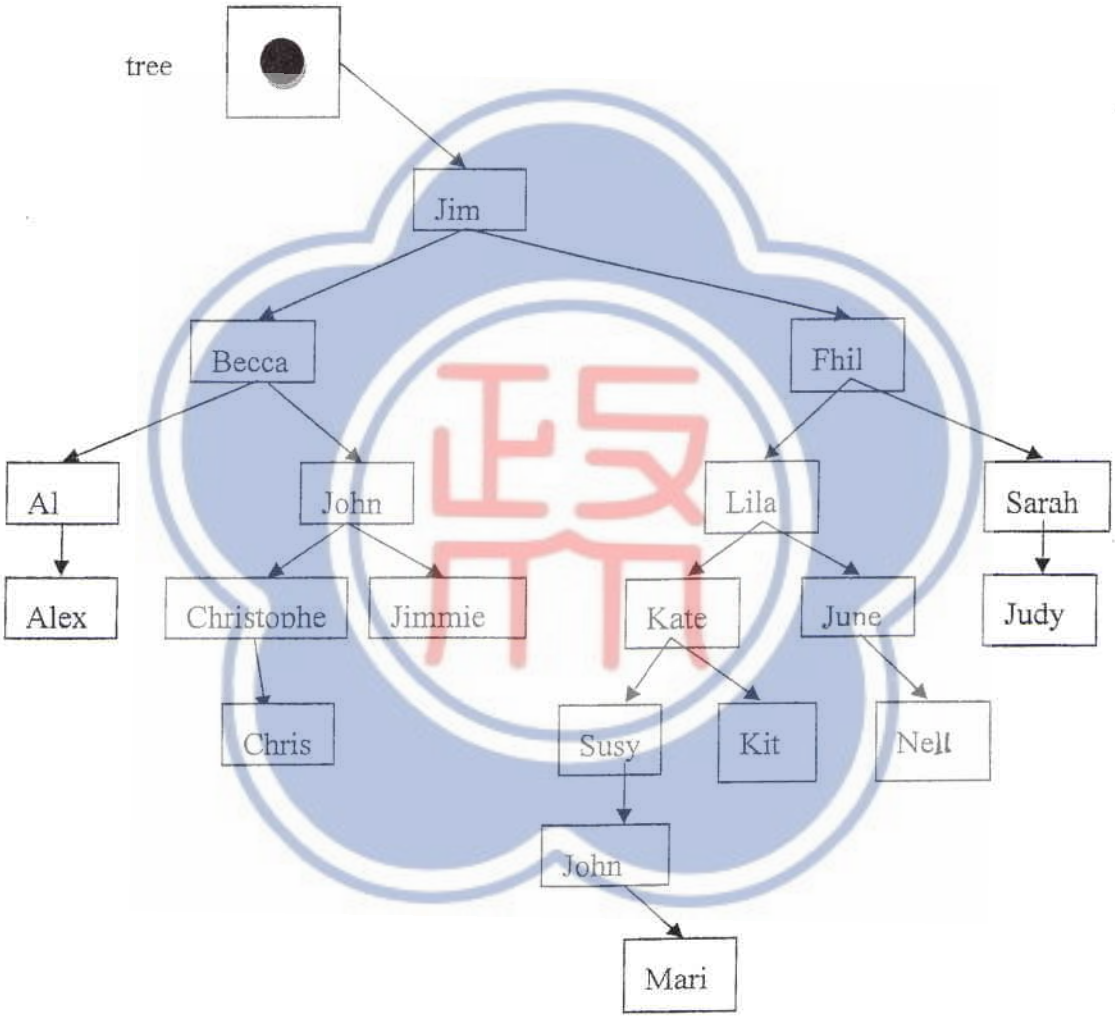
備註	試題隨卷繳交

考試科目	計算机概論	所別	資管系 管理系統組 4161 資管系 微積分組 4162	考試時間	7月7日(日)第1節

For 4-6, use the following tree.



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5. Name the content of each of the leaf nodes. **(7%)**
6. What is the height of the tree? **(4%)**

備註	試題隨卷繳交

考試科目	計算机概論	所別	資管系管理系統組 資訊組	4161 考試時間	3月7日(日)第1節

7. Show what is written by the following code. (25%)

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      while (v < b[--j] && j > b1) if (j == b1) break;
      if (i >= j) break;
      int temp = b[i];
      b[i] = b[j];
      b[j] = temp;
    }
int temp = b[i];
b[i] = b[b2];
b[b2] = temp;
return i;
}

void quick(int* array, int a1, int a2)
{ int i;
  if (a2 <= a1) return;
  i = parti(array, a1, a2);
  cout << array[i] << "\n";
  quick(array, i+1, a2);
  quick(array, a1, i-1);
}

int main()
{int ia[11] = {10, 32, 3, 16, 38, 36, 22, 28, 26, 21, 19};
  quick(ia, 0, 10);
  return 0;
}
```

國立政治大學 九十九學年度研究所(博/碩)士班招生考試試題 微積分 4162

考試科目	微積分	所別	資訊管理系	考試時間	3月7日(日)第三節

1. Let $\lim_{n\to\infty}(1+\frac{1}{n})=e$.

(10%)(a) Show that $\frac{d}{dx}\log_e x=\frac{1}{x}$.

(10%)(b) Show that $\frac{d}{dx}e^x=e^x$.

2. We know that the demand is elastic, unitary, or inelastic.

(10%)(a) Show that if the demand is elastic, then the revenue is decreasing.

(10%)(b) Show that if the demand is inelastic, then the revenue is increasing.

3. Let $f(x)=\int_x^{x^3} e^{(t^2)}\,dt$.

(10%)(a) Find $\frac{d}{dx}f(x)$.

(10%)(b) Find the equation of the tangent line to $f(x)$ at $x=1$.

4. Let the demand function be $p=D(x)$ and the supply function be $p=S(x)$ and the point of intersection be (x_1, p_1).

(10%)(a) Show that the consumers' surplus is $\int_0^{x_1}[D(x)-p_1]dx$.

(10%)(b) Show that the producers' surplus is $\int_0^{x_1}[p_1-S(x)]dx$.

5. Let $\frac{d}{dx}f(x)=2f(x)$ and $\frac{d}{dx}g(x)=1-g(x)$.

(10%)(a) Solve for $f(x)$ and show your work.

(10%)(b) Solve for $g(x)$ and show your work.

備註	試題隨卷繳交