JAVA Programming Language Homework IV － Array, Exception

Student ID: Name:

1. Given the following Java code:

```
1.    class C {
2.       public static void main(String[] args) {
3.          int a=0, b=5;
4.          try {
5.             System.out.print(a/b+b/a);
6.          } catch {
7.             System.out.println("Exceptions!!!");
8.          }
9.       }
10.   }
```

What is the result of attempting to compile the program?

A. Prints: Exceptions!!!

B. Prints Nothing

C. Compiler Error

D. Runtime Error

E. None of the above

Answer: C

題目中雖然撰寫了 catch 區塊，但並未給予例外類別名稱與建立例外實例，如：catch(ArithmetException e)，所以編譯時即會發生錯誤的情形。

2. Given the following Java code:

```
1.    class A {
2.       public static void main(String[] args) {
3.          int a=0, b=5;
4.          String c[] = {"A", "B", "C"};
5.          try {
6.             for(int i=1; i<4; i++) {
7.                System.out.print(c[i]);
8.             }
```

```
9.                System.out.print(a/b+b/a);
10.           }
11.           catch(ArithmetException e) {
12.               System.out.println(“D”);
13.           }
14.           catch(ArrayIndexOutOfBoundsException e) {
15.               System.out.println(“E”);
16.           }
17.       }
18.   }
```

What is the result of attempting to compile the program?

A. Prints: ABC

B. Prints: ABD

C. Prints: BCE

D. Prints: BCDE

E. Compiler Error

Answer: C

c[1] = ” B” , c[2] = ” C” , c[3] = 超出陣列索引

3. Given the following Java code:

```
1.      class A {
2.          public static void main(String[] args){
3.              int a=0, b=5;
4.              String c[] = {“A”, “B”, “C”};
5.              try {
6.                  System.out.print(c[a/b]);
7.                  try {
8.                      for(int i=0; i<4; i++) {
9.                          System.out.print(c[i]);
10.                     }
11.                 }
12.                 catch (Exception e)
13.                 {
```

```
14.                 System.out.println(“D”);
15.             }
16.             finally {
17.                 System.out.println(“E”);
18.             }
19.         }
20.         catch (Exception e) {
21.             System.out.println(“F”);
22.         }
23.         finally {
24.             System.out.println(“G”);
25.         }
26.     }
27. }
```

What is the result?

A. Prints: AABCG

B. Prints: ABCDG

C. Prints: AABCDG

D. Prints: AABCDEG

E. Prints: AABCDEFG

Answer: D

c[0/5] = c[0] = “A”
c[0] = “A”
c[1] = ” B”
c[2] = ” C”
c[3] = 超出陣列索引 輸出 “D”
進入第 16 行 finally 輸出 “E”
進入第 23 行 finally 輸出 “G”

4. Given the following Java code:

```
1.  class Num {
2.      public static void main( String[] args ) {
3.          int src[] = {10, 9, 8, 7, 6, 5, 4, 3, 2, 1};
```

```
4.              int res[] = {1, 2, 3, 4, 5};
5.              System.arraycopy(src, 0, res, 0, src.length);
6.              for(int i=0; i<res.length; i++) {
7.                 System.out.print(res[i]);
8.              }
9.           }
10.       }
```

What is the result?

A. 10987654321

B. 10987612345

C. 12345612345

D. Compiler error

E. Runtime exception

Answer: E

呼叫 arraycopy()時，來源陣列必須比目的陣列元素個數來的少，反則會發生超出陣列索引的情形。

5. Given the following Java code:

```
1.       class A {
2.          public static void main (String[] args) {
3.             byte a[] = new byte[2];
4.             long b[] = new long[2];
5.             float c[] = new float[2];
6.             Object d[] = new Object[2];
7.             System.out.print(a[1]+","+b[1]+","+c[1]+","+d[1]);
8.          }
9.       }
```

What is the result?

A. Prints: 0,0,0,null

B. Prints: 0,0,0.0,null

C. Prints: 0,0,0,0

D. Prints: null,null,null,null

E. The code runs with no output.

Answer: B

此題四個資料型態各宣告了 1 維陣列，並配置 2 個陣列元素空間，並且沒有給予初始值，故此題目的在於測驗各資料型態的預設初始值情形。

6. Given the following Java code:

```
1.      class A {
2.          public static void main(String[] args) {
3.              int[    ] var1;
4.              int[5] var2;
5.              int[] var3;
6.              int var4[];
7.          }
8.      }
```

What is the result?
A. compile-time errors occur at line 3
B. compile-time errors occur at line 4
C. compile-time errors occur at line 5
D. compile-time errors occur at line 6
E. None of the above

Answer: B

若要指定元素個數不可在[]裡寫數值，而是以 new 的方式配置：
int[] var2 = new int[5];

7. Given the following Java code:

```
1.      class A {
2.          static void my() throws ArithmeticException {
3.              System.out.print(“A”);
4.              throw new ArithmeticException(“A”);
```

```
5.          }
6.          public static void main (String args []) {
7.             try {
8.                my();
9.             }
10.            catch (Exception e) {
11.               System.out.print(“B”);
12.            }
13.            finally {
14.               System.out.print(“C”);
15.            }
16.         }
17.      }
```

What is the result?

A. Prints: A

B. Prints: AC

C. Prints: ABC

D. Prints: AABC

E. Prints: C

Answer: C

題目中，try 區塊會呼叫 my()方法，以下為執行流程：

- **輸出 A**
- **丟出一個 ArithmeticException，由於 my()裡面沒有 catch**
- **由上層的 catch(第 10 行)所捕捉，輸出 B**
- **進入 finally 區塊，輸出 C**

8. Given the following Java code:

```
1.       class B extends Exception {}
2.       class C extends B {}
3.       class D extends C {}
4.       class A {
5.          public static void main(String args[]) {
6.             int a,b,c,d,x,y,z;
```

```
7.          a = b = c = d = x = y = 0;
8.          z = 1;
9.          try {
10.            try {
11.               switch(z) {
12.                  case 1: throw new B();
13.                  case 2: throw new C();
14.                  case 3: throw new D();
15.                  case 4: throw new Exception();
16.               }
17.               a++;
18.            }
19.            catch ( C e ) {b++;}
20.            finally{c++;}
21.         }
22.         catch ( B e ) {d++;}
23.         catch ( Exception e ) {x++;}
24.         finally {y++;}
25.         System.out.print(a+","+b+","+c+","+d+","+x+","+y);
26.      }
27.   }
```

What is the result?

A. 0,0,1,1,0,1

B. 0,1,0,1,1,0

C. 0,0,1,1,0,1

D. 0,1,1,1,1,1

E. 1,1,0,1,0,0

Answer: A

- 初始化 a, b, c, d, x, y 為 0，z 為 1
- 進入 switch，case 1，丟出例外 B
- catch(C e)無法捕捉，進入第二層的 finally，執行 c++: c=1
- 將例外往上丟
- 被 catch (B e)捕捉，執行 d++: d=1
- 略過 catch (Exception e)，離開第一層的 try
- 進入第一層的 finally，執行 y++: y=1

故結果為： 0,0,1,1,0,1

9. Given the following Java code:

```
1.      class B extends Exception {
2.          public void myMethod( ) throws RuntimeException {}
3.      }
4.
5.      class A extend B{
6.          public void myMethod( ) throws Exception {}
7.          public static void main (String[] args) {}
8.      }
```

Compile-time errors occur at which lines?

A. 1

B. 2

C. 6

D. 7

E. None of the above

Answer: C

由於所丟出的 Exception 類別比原來方法所丟出的 RuntimeException 的涵蓋範圍還大，所以在 A 類別裡覆寫 myMethod( )是不合法的作法。

10. Given the following Java code:

```
1.      class A {
2.          public static void main (String[] args) {
3.              int a=1, b=0;
4.              int c[] = {1,2,3};
5.              try {
6.                  System.out.print(c[1]);
7.                  try {
8.                      System.out.print(a/b+b/a);
9.                  }
10.                 catch (ArithmeticException e)
11.                 {
12.                     System.out.print("C");
13.                 }
```

```
14.             }
15.             catch (ArrayIndexOutOfBoundsException e) {
16.                System.out.print("A");
17.             }
18.             finally {
19.                System.out.print("B");
20.             }
21.          }
22.       }
```

What is the result?

(A) 1BC

(B) 1CB

(C) 2BC

(D) 2CB

(E) 2AC

Answer: D

- 一開始會輸出 c[1]的值 2，且不會發生例外，進入第 2 個 try 區塊
- a/b+b/a 發生：ArithmeticException 例外，立即被 catch 捕捉，印出 C
- 離開第 2 層的 try，最後執行 finally 區塊，印出 B