練習：費伯那西數列 (Fibonacci Sequence)

操作重點

1. 寫一個程式，輸出小於指定的數字的費伯那西數列 (Fibonacci Sequence)
   - 取得要列印的最大範圍

   費伯那西數列 (Fibonacci Sequence)

   - 1、1、2、3、5、8、13、21、34、55、89、144 ……
   - 每個數字都是前兩個數字的和

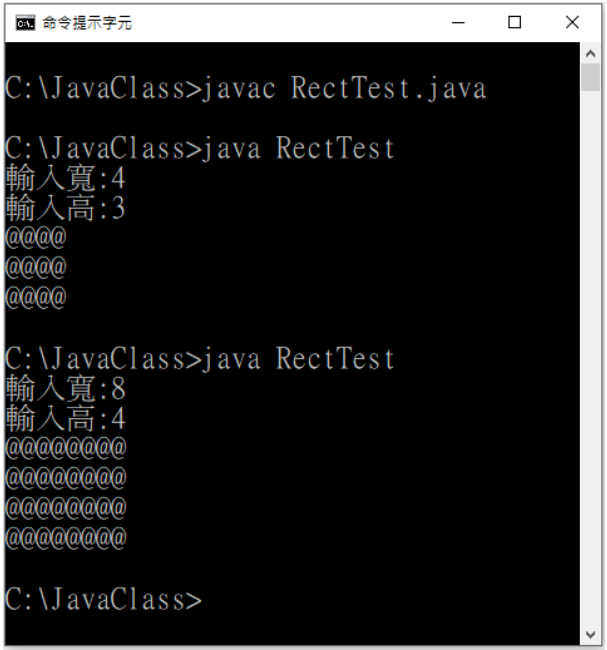
FiboSequence.java

```
1  public class FiboSequence {
2      public static void main(String[] args) {
3          java.util.Scanner sc = new java.util.Scanner(System.in);
4          System.out.print("輸入最大範圍:");
5          int max = sc.nextInt();
6          int num1 = 1;
7          int num2 = 1;
8          System.out.print(num1+", "+num2);
9          int next = num1+num2;
10
11         while (next < max){
12             System.out.print(", " + next);
13             num1 = num2;
14             num2 = next;
15             next = num1+num2;
16         }
17         System.out.println();
18     }
19 }
20
```

練習：矩形繪圖

操作重點

1. 依據使用者輸入的寬及高，繪製矩形



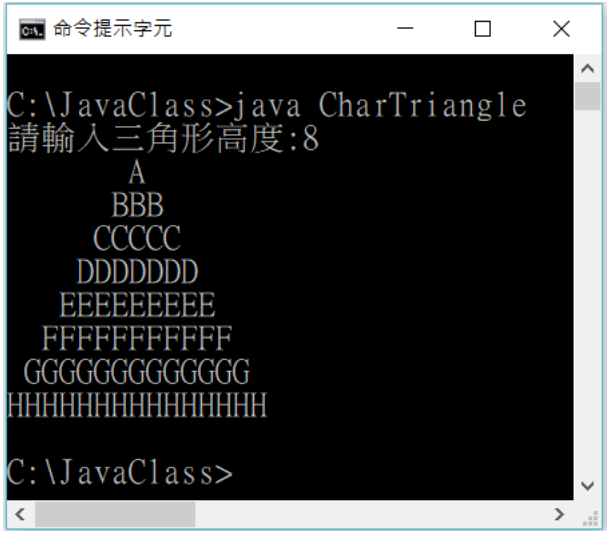
RectTest.java

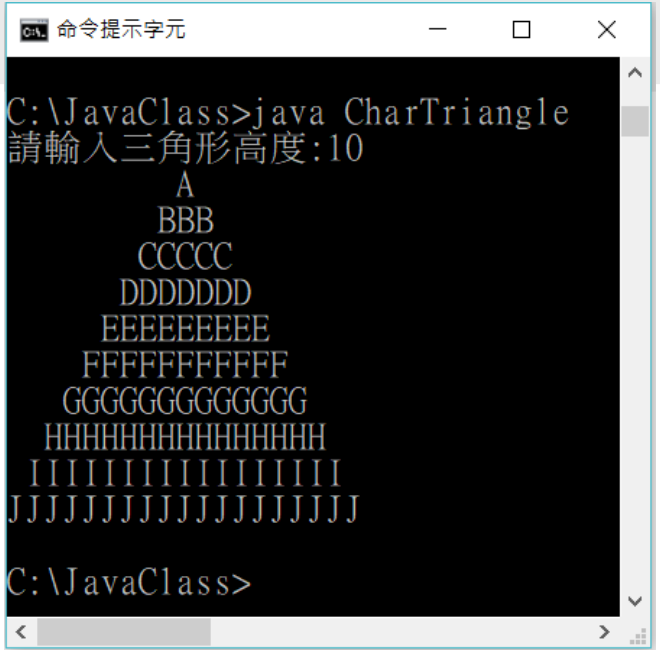
```
1  public class RectTest {
2      public static void main(String[] args) {
3          java.util.Scanner sc = new java.util.Scanner(System.in);
4          System.out.print("輸入寬:");
5          int width = sc.nextInt();
6          System.out.print("輸入高:");
7          int height = sc.nextInt();
8
9          for(int i=0; i<height; i++){
10             for(int j=0; j<width; j++){
11                 System.out.print("@");
12             }
13             System.out.println();
14         }
15
16     }
17 }
18
```

練習：矩形字元三角形

操作重點

1. 撰寫一程式，使用巢狀迴圈顯示以下圖形。





CharTriangle.java

```
1  public class CharTriangle {
2      public static void main(String[] args) {
3          java.util.Scanner sc = new java.util.Scanner(System.in);
4          System.out.print("輸入高:");
5          int height = sc.nextInt();
6          for(int i=0; i<height; i++){
7              for(int j=0; j<height-1-i; j++){
8                  System.out.print(" ");
9              }
10             char c = (char)('A'+i);
11             for(int k=0; k<2*i+1; k++){
12                 System.out.print(c);
13             }
14             System.out.println();
15         }
16     }
17 }
18
```

練習：檢驗因數

操作重點

1. 寫一程式計算所輸入的數的所有因數

TestFactor.java

```
1  class TestFactor {
2      public static void main(String[] args) {
3          java.util.Scanner sc = new java.util.Scanner(System.in);
4          System.out.print("輸入整數:");
5          int num = sc.nextInt();
6          System.out.print(num+"的因數: ");
7          for(int i=1; i<=num; i++){
8              if(num%i!=0)
9                  continue;
10             System.out.print(i+", ");
11         }
12
13     }
14 }
15
```

練習：檢驗質數

操作重點

1. 寫一程式計算所輸入的數是否為質數

TestPrimeNum.java

```
 1 public class TestPrimeNum {
 2     public static void main(String[] args) {
 3         java.util.Scanner sc = new java.util.Scanner(System.in);
 4         System.out.print("輸入整數:");
 5         int num = sc.nextInt();
 6         boolean isPrimeNum = true;
 7         for(int i=2; i<num; i++){
 8             if(num%i==0){
 9                 isPrimeNum = false;
10                 break;
11             }
12         }
13         System.out.println(num+((isPrimeNum)?"是質數":"不是質數"));
14     }
15 }
16
```