**2022/03/18 Java學習紀錄**

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| 思維歷程：  目標：使用輸入及輸出功能，使用者分別輸入三角形之三邊長，系統判斷三角形類別、周長、面積。  執行方式：系統引導使用者希依序輸入三角形三邊，分別存入變數a、b、c，系統會依照邊長判斷三角形類型，並計算面積及邊長，最後向使用者顯示結果。 | |
| 根源碼：（檔名：triangle\_0318\_v2.java）此為第二版本，輸出結果會分段分析，最後再合併顯示；前一版本會一項項分析，每項分別輸出所有敘述。[前一版本另外置於附錄。](#根源碼第二版) | |
| import java.util.\*;//匯入函式庫  public class triangle\_0318\_v2 {  // 類別名稱（class name）要與檔案名稱相同  public static void main(String args[]) {  // 主程式名稱、引數、小寫  double a, b, c;  Scanner n = new Scanner(System.in); // 產生Scanner  System.out.print("請輸入三角形之第一邊："); // 輸出不換行  a = n.nextFloat();// 輸入a  System.out.print("請輸入三角形之第二邊："); // 輸出不換行  b = n.nextFloat();// 輸入b  System.out.print("請輸入三角形之第三邊："); // 輸出不換行  c = n.nextFloat();// 輸入c  double s = (a + b + c) / 2;// 計算s  double area = Math.sqrt(s \* (s - a) \* (s - b) \* (s - c)); // 計算面積area，Math.sqrt -> 根號  String reason = "reason"; // 建立字串，內有預設文字  double clen = a + b + c; // 計算邊長clen  // 排序  if (b > a) {  double re = b;  b = a;  a = re;  }  if (c > a) {  double re = c;  c = a;  a = re;  }  if (c > b) {  double re = c;  c = b;  b = re;  }  // 排序結束  String feed\_tri = "", feed\_sam = "", reason\_sam = "", feed\_angle = ""; // 若無值無法執行 | // 是不是三角形feed\_tri  if (a >= b + c) { // 兩邊之和小於等於第三邊，不是三角形  feed\_tri = "不是";  reason = a + ">=" + b + "+" + c;  System.out.println("判斷結果：\n因" + reason + "，所以" + a + ", " + b + ", " + c + "不是三角形");  System.out.println("周長：無法計算");  System.out.println("面積：無法計算");  System.exit(0);// 結束程式  } else {// 是三角形  feed\_tri = "是";  }  // 是不是等腰or正三角形feed\_sam  if (a == b && b == c) {// 三邊等長為正三角形  feed\_sam = "正";  reason = a + "=" + b + "=" + c;  } else if (b == c) {// 若兩小邊等長則為等腰  feed\_sam = "等腰";  reason\_sam = "，且" + b + "=" + c; // 若為等腰必須加上此因素  }  // 是鈍角銳角直角feed\_angle  if (c \* c + b \* b == a \* a) { // 畢氏定理判斷正三角形  reason = a + "^2=" + b + "^2+" + c + "^2";  feed\_angle = "直角";  } else if (c \* c + b \* b > a \* a && !(a == b & b == c)) { // 兩小邊平方合大於第三邊平方且排除正三角形則為銳角  reason = a + "^2<" + b + "^2+" + c + "^2";  feed\_angle = "銳角";  } else if (c \* c + b \* b < a \* a) { // 兩小邊平方合小於第三邊平方則為鈍角  reason = a + "^2>" + b + "^2+" + c + "^2";  feed\_angle = "鈍角";  }  System.out.println("判斷結果：\n因" + reason + reason\_sam + "，所以" + a + ", " + b + ", " + c + feed\_tri + feed\_sam + feed\_angle + "三角形");// 合併前述之原因及結果，一併輸出  System.out.println("周長：" + clen);// 輸出換行  System.out.println("面積：" + Math.round(area \* 100.0) / 100.0);// 四捨五入至小數點後二位  }// main()  }// class |

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| 執行結果： |  |
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| 心得與反思：   * I learned how to edit, compile, and run the java code. * Problems I met:   When I tried the code, I didn’t give content for “reason” and “result”, so I couldn’t export the result. (Left picture)  When I ran the code, I found that the number would become strange in the export. I wrote wrong code in line 8,10, and 11, it should be” n.nextDouble,” it’s not “n.nextFloat.” (Right picture)   * In the beginning, I write all the possible results, but I considered that this way was difficult to edit again. As the result, I made the export segmented, so I can edit every part of the result. I think it’s easier to edit in the future. | |

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| **03/18學習成效評估表**  5.非常符合 4.符合 3.普通 2.不符合 1.非常不符合 |
| * (4)寫完第3程式習題，熟悉輸出敘述及java程式結構? * (3)寫完第3程式習題，熟悉輸入敘述? * (5)寫完第3程式習題，熟悉變數概念? * (5)寫完第3程式習題，熟悉運算式（如a\*b-c）? * (5)寫完第3程式習題，熟悉條件式 ? * (4)寫完第3程式習題，熟悉if else 敘述概念? * (5)寫完第3程式習題，熟悉if else 敘述用途? * (3)寫完第3程式習題，熟悉線上編輯、編譯、執行之操作環境? * (4)寫完第3程式習題，熟悉cmd編輯、編譯、執行之操作環境? * (5)寫完第3程式習題，理解編輯(edit)概念? * (4)寫完第3程式習題，理解編譯(compile)概念? * (4)寫完第3程式習題，理解執行(run)概念? |
| **附錄：根源碼第一版本** |
| import java.util.\*;//匯入函式庫  public class triangle\_0318 { // 類別名稱（class name）要與檔案名稱相同  public static void main(String args[]) { // 主程式名稱、引數、小寫  double a, b, c;  Scanner n = new Scanner(System.in);// 產生Scanner  System.out.print("請輸入三角形之第一邊：");// 輸出不換行  a = n.nextFloat();// 輸入a  System.out.print("請輸入三角形之第二邊：");// 輸出不換行  b = n.nextFloat();// 輸入b  System.out.print("請輸入三角形之第三邊：");// 輸出不換行  c = n.nextFloat();// 輸入c  double s = (a + b + c) / 2;//計算s  double area = Math.sqrt(s \* (s - a) \* (s - b) \* (s - c));//計算面積area，Math.sqrt -> 根號  String reason = "reason", result = "result";//建立字串，內有預設文字  double clen = a + b + c;//計算邊長clen  // 排序  if (b > a) {  double re = b;  b = a;  a = re;  }  if (c > a) {  double re = c;  c = a;  a = re;  }  if (c > b) {  double re = c;  c = b;  b = re;  }  // 排序結束  if (a > b + c) {// 以下列出每一種可能  reason = a + ">" + b + "+" + c;  result = "不是三角形";  clen = 0;  area = 0;  } else if (a == b && b == c) {  reason = a + "=" + b + "=" + c;  result = "是正三角形";  } else if (c \* c + b \* b > a \* a && c == b) {  reason = a + "^2<" + b + "^2+" + c + "^2";  result = "是等腰直角三角形";  } else if (c \* c + b \* b == a \* a) {  reason = a + "^2=" + b + "^2+" + c + "^2";  result = "是直角三角形";  } else if (c \* c + b \* b > a \* a && c == b) {  reason = a + "^2<" + b + "^2+" + c + "^2";  result = "是等腰銳角三角形";  } else if (c \* c + b \* b < a \* a && c == b) {  reason = a + "^2>" + b + "^2+" + c + "^2";  result = "是等腰鈍角三角形";  } else if (c \* c + b \* b < a \* a) {  reason = a + "^2>" + b + "^2+" + c + "^2";  result = "是鈍角三角形";  } else if (c \* c + b \* b > a \* a) {  reason = a + "^2<" + b + "^2+" + c + "^2";  result = "是銳角三角形";  }  System.out.println("判斷結果：\n因" + reason + "，所以" + a + ", " + b + ", " + c + result);  System.out.println("周長：" + clen);  System.out.println("面積：" + area);  }// main()  }// class |