Programming Languages Homework 1

功課習題：

1. 2.21
2. 2.23
3. 2.24
4. 2.25
5. 2.26
6. 2.27
7. 2.31
8. 2.32
9. 2.33

繳交期限：10/23 (四) 晚上 11:59 前

繳交格式：103360001_李奇樺 .pdf

繳交內容：**讀書會(包含:組員、討論時間、地點、照片或 Google Meet)、心得報告(包含: 心得、GitHub 程式連結、GitHub 的截圖)**

上傳位置：Homework\Upload

帳號、密碼：CC

如有問題請 Mail 至

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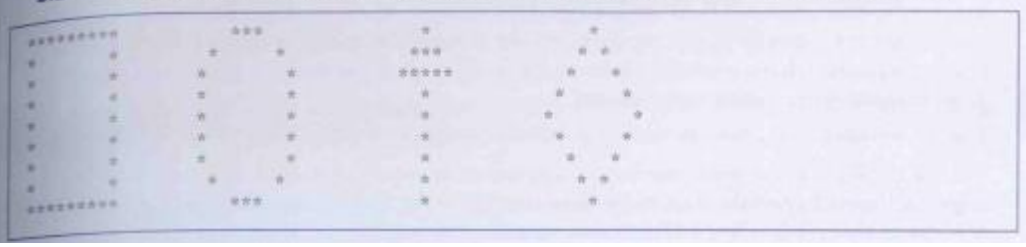
2.21：

2.21 *(Shapes with Asterisks)* Write a program that prints the following shapes with asterisks.

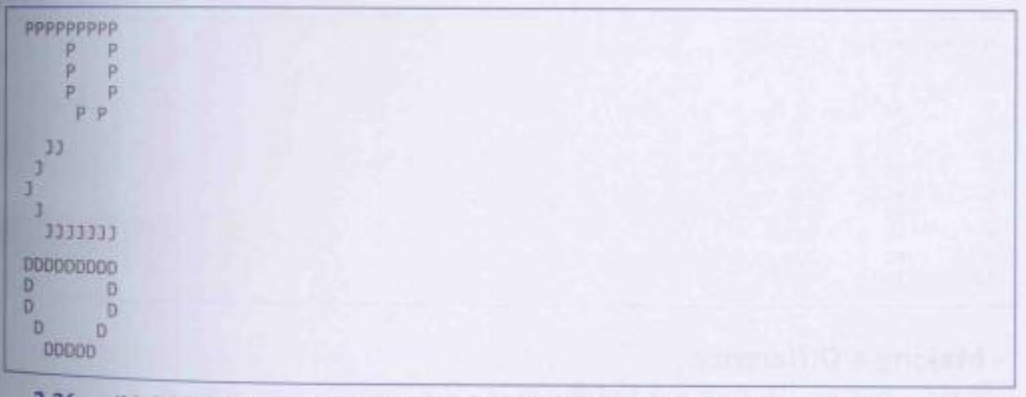


2.23 至 2.27：

2.23 *(Largest and Smallest Integers)* Write a program that reads in three integers and then determines and prints the largest and the smallest integers in the group. Use only the programming techniques you have learned in this chapter.

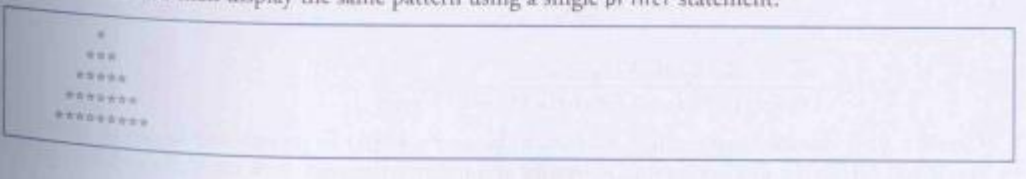
2.24 *(Odd or Even)* Write a program that reads an integer and determines and prints whether it's odd or even. [*Hint:* Use the remainder operator. An even number is a multiple of two. Any multiple of two leaves a remainder of zero when divided by 2.]

2.25 Print your initials in block letters down the page. Construct each block letter out of the letter it represents, as shown below.



2.26 *(Multiples)* Write a program that reads in two integers and determines and prints whether the first is a multiple of the second. [*Hint:* Use the remainder operator.]

2.27 *(Pyramid Pattern of Asterisks)* Display the following pyramid pattern with five `printf` statements and then display the same pattern using a single `printf` statement.



2.31：

2.31 *(Table of Squares and Cubes)* Using only the techniques you learned in this chapter, write a program that calculates the squares and cubes of the numbers from 0 to 10 and uses tabs to print the following table of values:

```
number  square  cube
0       0       0
1       1       1
2       4       8
3       9       27
4       16      64
5       25      125
6       36      216
7       49      343
8       64      512
9       81      729
10      100     1000
```

2.32：

2.32 *(Body Mass Index Calculator)* We introduced the body mass index (BMI) calculator in Exercise 1.14. The formulas for calculating BMI are

$$BMI = \frac{weightInPounds \times 703}{heightInInches \times heightInInches}$$

or

$$BMI = \frac{weightInKilograms}{heightInMeters \times heightInMeters}$$

Create a BMI calculator application that reads the user's weight in pounds and height in inches (or, if you prefer, the user's weight in kilograms and height in meters), then calculates and displays the user's body mass index. Also, the application should display the following information from the Department of Health and Human Services/National Institutes of Health so the user can evaluate his/her BMI:

```
BMI VALUES
Underweight: less than 18.5
Normal:      between 18.5 and 24.9
Overweight:  between 25 and 29.9
Obese:       30 or greater
```

[*Note:* In this chapter, you learned to use the `int` type to represent whole numbers. The BMI calculations when done with `int` values will both produce whole-number results. In Chapter 4 you'll learn to use the `double` type to represent numbers with decimal points. When the BMI calculations are performed with `double`s, they'll both produce numbers with decimal points—these are called "floating-point" numbers.]

2.33：

2.33 *(Car-Pool Savings Calculator)* Research several car-pooling websites. Create an application that calculates your daily driving cost, so that you can estimate how much money could be saved by car pooling, which also has other advantages such as reducing carbon emissions and reducing traffic congestion. The application should input the following information and display the user's cost per day of driving to work:

a) Total miles driven per day.
b) Cost per gallon of gasoline.
c) Average miles per gallon.
d) Parking fees per day.
e) Tolls per day.

題目的主旨為請你設計一個應用程式，來計算你一天開車所需要的花費。

整個題目的翻譯如下:

研究過數個共乘網站後，麻煩設定一個應用程式來計算你一天開車所需的花費，以便我們估計透過共乘能夠節省多少花費，並且共乘也擁有減少碳排放與減少交通阻塞的優點。而這個應用程式的輸入應該要輸入以下的資訊，並顯示使用者一天下來開車去工作的花費:

a) 一整天的總里程數
b) 汽油一公升/加侖多少錢
c) 平均一公升/加侖能行駛多少公里
d) 一天的停車費
e) 一天的通行費(過路費)