

Programming Practice: Draw Figure

1. Write a C program that reads in a positive integer side from 3 to 29, and draws an isosceles triangle with side length `side` and base length $2 \times \text{side} - 1$. Output 10 blanks on the left side of the figure, use '*' to mark the sides of the isosceles triangle, and blanks to mark the interior points of the isosceles triangle. Program source code: `draw_triangle.c`.
2. Write a C program that reads in a positive integer side from 2 to 30 and draws a square with each side of length `side`. Output 10 blanks on the left side of the figure, use '*' to mark the sides of the square and blanks to mark the interior points of the square. Program source code: `draw_square.c`.
3. Write a C program that reads in a positive integer side from 3 to 29 and draws a solid rhombus (diamond) with side of length `side`. Output 10 blanks on the left side of the figure, using '*' to mark the sides of the rhombus, and '@' to mark the interior points of the rhombus. Program source code: `draw_rhombus.c`.
4. Write a C program to draw the Chinese character "Chia" 「甲」 of "Feng Chia University". Read integer `n` of value 1 to 5 (including) as the width of the strokes of a Chinese character. Use character '#' to draw the strokes. The top-half of 「甲」 is character 「田」 with each white space being a square of side $n+2$; the lower-half of 「甲」 is a vertical bar with length $3n+1$. The following is the sample output of $n=2$.

```
Enter an integer n (between 1 and 5): 2

#####
#####
##  ##  ##
##  ##  ##
##  ##  ##
##  ##  ##
#####
#####
##  ##  ##
##  ##  ##
##  ##  ##
##  ##  ##
#####
#####
      ##
      ##
      ##
      ##
      ##
      ##
      ##
```

Program source code: `draw_chinese_character_chia.c`.