1. Type in and run the five programs presented in this chapter. Compare the output produced by each program with the output presented after each program in the text.

2. Which of the following are invalid variable names? Why?

Click here to view code image

Int	char	6_05
Calloc	Xx	alpha_beta_routine
floating	_1312	z
ReInitialize	_	A$

3. Which of the following are invalid constants? Why?

Click here to view code image

123.456	0x10.5	0X0G1
0001	0xFFFF	123L
0Xab05	0L	-597.25
123.5e2	.0001	+12
98.6F	98.7U	17777s
0996	-12E-12	07777
1234uL	1.2Fe-7	15,000
1.234L	197u	100U
0XABCDEFL	0xabcu	+123

4. Write a program that converts 27® from degrees Fahrenheit (F) to degrees Celsius (C) using the following formula:

```
C = (F - 32) / 1.8
```

5. What output would you expect from the following program?

```
#include <stdio.h>

int main (void)
{
     char c, d;

     c = 'd';
     d = c;
     printf ("d = %c\n", d);

    return 0;
}
```

6. Write a program to evaluate the polynomial shown here:

$3x^3 - 5x^2 + 6$

for $x = 2.55$.

```
integerVar = 100
floatingVar = 331.790009
doubleVar = 8.440000e+11
doubleVar = 8.44e+11
charVar = W
boolVar = 0

Process returned 0 (0x0)   execution time : 0.086 s
Press any key to continue.
```

```
a - b = 98
b * c = 50
a / c = 4
a + b * c = 150
a * b + c * d = 300

Process returned 0 (0x0)   execution time : 0.091 s
Press any key to continue.
```

```
6 + a / 5 * b = 16
a / b * b = 24
c / d * d = 25.000000
-a = -25

Process returned 0 (0x0)   execution time : 0.084
Press any key to continue.
```

```
a = 25, b = 5, c = 10, and d = 7
a % b = 0
a % c = 5
a % d = 4
a / d * d + a % d = 25

Process returned 0 (0x0)   execution time : 0.090 s
Press any key to continue.
```

```
123.125000 assigned to an int produces 123
-150 assigned to a float produces -150.000000
-150 divided by 100 produces -1.000000
-150 divided by 100.0 produces -1.500000
(float) -150 divided by 100 produces -1.500000

Process returned 0 (0x0)   execution time : 0.101 s
Press any key to continue.
```

6. Write a program to evaluate the polynomial shown here:

$$3x^3 - 5x^2 + 6$$

for $x = 2.55$.

main.c

Share Run

```c
#include <stdio.h>

int main() {
    // 1. ประกาศตัวแปร x และกำหนดค่า
    double x = 2.55;

    // 2. คำนวณตามสูตร: 3x^3 - 5x^2 + 6
    // ใช้การคูณกันเอง (x * x * x) แทนการใช้ pow()
        เพื่อความง่ายและไม่ต้องดึงไลบรารี math.h
    double result = (3 * x * x * x) - (5 * x * x) + 6;

    // 3. แสดงผลลัพธ์
    printf("The result for x = 2.55 is: %f\n", result);

    return 0;
```

Output Clear

```
The result for x = 2.55 is: 23.231625


=== Code Execution Successful ===
```

8. To round off an integer `i` to the next largest even multiple of another integer `j`, the following formula can be used:

```
Next_multiple = i + j - i % j
```

For example, to round off 256 days to the next largest number of days evenly divisible by a week, values of `i = 256` and `j = 7` can be substituted into the preceding formula as follows:

Click here to view code image

```
Next_multiple    = 256 + 7 - 256 % 7
                 = 256 + 7 - 4
                 = 259
```

main.c

Share Run

```c
#include <stdio.h>

int main() {
    int i, j, next_multiple;

    // ตัวอย่างที่ 1: จากโจทย์ (256 วัน, หาพหุคูณของ 7)
    i = 256;
    j = 7;
    next_multiple = i + j - i % j;
    printf("i = %d, j = %d, Next multiple = %d\n", i, j,
        next_multiple);

    // ตัวอย่างที่ 2: (365, 7)
    i = 365;
    j = 7;
```

Output Clear

```
i = 256, j = 7, Next multiple = 259
i = 365, j = 7, Next multiple = 371
i = 12258, j = 23, Next multiple = 12259
i = 996, j = 4, Next multiple = 1000


=== Code Execution Successful ===
```

(9)

```
Next_Multiple=371
Next_Multiple=12259
Next_Multiple=1000

Process returned 0 (0x0)   execution time : 0.094 s
Press any key to continue.
```