



Chapter 4

Homework

Prof. Sungdeok Cha
TA. Hodong Kim
Korea University



Problem 1

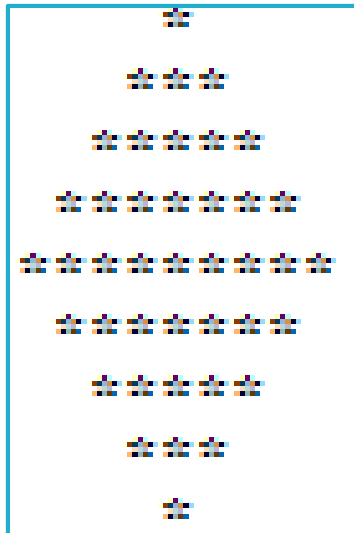
- ▶ Write a program that inputs a series of 5 numbers and determines and prints the largest of the numbers
- ▶ Use 'do-while' statement

```
Enter the number: -1
Enter the number: -2
Enter the number: -3
Enter the number: -77
Enter the number: -98
Largest is -1
```

```
Enter the number: 4
Enter the number: 5
Enter the number: 6
Enter the number: 7
Enter the number: -1
Largest is 7
```

Problem 2

- ▶ Write a program that prints the following diamond shape
- ▶ You may use printf statements that print either a single asterisk (*) or a single blank (Cannot use array.)
- ▶ Maximize your use of repetition and minimize the number of printf statements (Hint: Use nested **for** loops to generate the patterns)



Problem 3

- ▶ Write a program which is taking inputs for a character that you will print out as diamond shape, a character that you will fill out spaces excepting your diamond, height of your diamond, and width between characters which are shaping diamonds.
- 1. Design your algorithm with 'for' and 'while' loops on main()
- 2. Use printf statements for printing out a single character value only after you took all inputs.
- 3. Put an extra space row of spacing characters on left and right side of your diamond.
- 4. You cannot use 'array', and 'switch'.

```
Printing character: @
2nd printing character : _
Height of diamond: 1
Wrong input for height of diamond.
Height of diamond: 2
Wrong input for height of diamond.
Height of diamond: 9
Space(s) between characters: 2
      @
    _ _ _
  _ _ _ _ _
_ _ _ _ _ _
_ _ _ _ _ _
  _ _ _ _ _
    _ _ _
      @
계속하려면 아무 키나 누르십시오 . . .
```

```
Printing character: #
2nd printing character : ~
Height of diamond: 1
Wrong input for height of diamond.
Height of diamond: 2
Wrong input for height of diamond.
Height of diamond: 4
Wrong input for height of diamond.
Height of diamond: 6
Wrong input for height of diamond.
Height of diamond: 8
Wrong input for height of diamond.
Height of diamond: 5
Space(s) between characters: 3
~~~~~#~~~~~
~~~~~#~~~~~#~~~~~
~#~~~~~#~
~~~~~#~~~~~#~~~~~
~~~~~#~~~~~
계속하려면 아무 키나 누르십시오 . . .
```

Problem 4

- ▶ An online retailer sells five different products whose retail prices are shown in the following table:

Product number	Retail price
1	\$ 2.98
2	\$ 4.50
3	\$ 9.98
4	\$ 4.49
5	\$ 6.87

- ▶ Write a program that reads a series of number: (1) Product number and (2) Quantity sold, and display the total retail value of all products sold (Use 'switch' statement)

```
Enter pairs of item numbers and quantities.  
Enter -1 for the item number to end input.  
1 1  
2 1  
3 1  
4 1  
5 1  
6 1  
Invalid product code: 6  
Quantity: 1  
1 1  
-1  
The total retail value was: 31.80
```

Problem 5



- ▶ π is an infinite decimal and can be calculated using infinite series
 - 3.1415926535 8979323846 2643383279 5028841971 6939937510 ... (from Wikipedia)
 - $\pi = 4 \left(\frac{1}{1} - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \frac{1}{11} + \frac{1}{13} - \frac{1}{15} + \frac{1}{17} - \frac{1}{19} + \frac{1}{21} - \frac{1}{23} + \frac{1}{25} - \frac{1}{27} + \frac{1}{29} - \frac{1}{31} + \dots \right)$
- ▶ Write a program that calculates the approximated value of π using above expression. Use sample code and complete the body of *for* statement
 - (1) Repeat 900000 times to increase accuracy of π
 - (2) Print π value every 50000 times (with 6 digits after the decimal point)

```
Accuracy set at: 900000
term          pi
50000         3.141573
100000        3.141583
150000        3.141586
200000        3.141588
250000        3.141589
300000        3.141589
350000        3.141590
400000        3.141590
450000        3.141590
500000        3.141591
550000        3.141591
600000        3.141591
650000        3.141591
700000        3.141591
750000        3.141591
800000        3.141591
850000        3.141591
900000        3.141592
```

```
#include<stdio.h>
int main(void) {
    double pi = 0.0; /* approximated value for pi */
    double num = 4.0; /* nu berator */
    double denom = 1.0; /* denominator of each team */
    long int loop; /* loop counter */
    long int accuracy = 900000; /* the number of terms */

    printf("Accuracy set at %d \n", accuracy);
    printf("term \t\t pi \n");

    for (loop = 1 ; loop <= accuracy ; loop++) {
        /*
         * complete the code
         */
    }

    return 0;
}
```



Homework 03

▶ 제출 파일: “본인의학번_HW03.zip”

ex) 본인의 학번이 2028123456일 경우 -> 2028123456_HW03.zip

- 아래 내용을 하나로 압축한 zip file.

- 1.c, ..., 5.c

- 각각의 문제에 대한 답안 소스파일.

- 1.png, ... , 5.png

- 각각의 문제에 대한 소스파일을 실행한 실행결과 캡처 이미지.

- (jpg 나 png 형식)

▶ BlackBoard(kulms.korea.ac.kr) → Assignments

▶ Due Date : 2018/04/03 23:59

▶ 형식에 맞지 않는 제출물은, 미제출로 처리됩니다.