FPT UNIVERSITY

COMPUTING FUNDAMENTALS

PE TRIAL #1

PRF192 - PROGRAMMING FUNDAMENTALS

Time Allowed: **60 minutes**

INSTRUCTIONS

1. This question paper contains **TEN (10)** questions.
2. The number of points for each question is in parentheses printed in left margin.
3. Maximum score of this question paper is **(10)** points.
4. Calculators are allowed, but not smart phones or tablets.
5. **No Other Materials** are allowed except the ones provided for you.
6. After the time allowed, you are required to submit your answers to the place provided for you.

——— END OF INSTRUCTIONS ———

(1) 1. Users are required to enter two float variables `a` and `b` using the keyboard (STDIN). Compute the average square:

$$\frac{a^2 + b^2}{2}$$

then print out the result with 2 decimal places.
Below is an example of how the program will run:

```
1.23
4.56

OUTPUT:
11.15
--------------------------------
Process exited after 0.04649 seconds with return value 1701
Press any key to continue . . .
```

(1) 2. Users are required to enter non-negative integer variables `n` using the keyboard (STDIN). The system displays the product of all even numbers that are greater than or equal to 2 and smaller than or equal to half of `n`. Below is an example of how the program will run when entering `n = 9`:

```
9

OUTPUT:
8
--------------------------------
Process exited after 0.04649 seconds with return value 1701
Press any key to continue . . .
```

(1) 3. Your program allows users to enter 5 float numbers. The system displays the entered numbers in descending order.
Below is an example of how the program will run:

```
9.4
8.2
6.3
7.2
5.1

OUTPUT:
9.400000 8.200000 7.200000 6.300000 5.100000
--------------------------------
Process exited after 0.04649 seconds with return value 1701
Press any key to continue . . .
```

(1) 4. Your program allows users to enter an integer number `n`. The system displays an inverted right triangle with the height equal `n`.
Below is an example of how the program will run:

```
5

OUTPUT:
*****
 ****
  ***
   **
    *
--------------------------------
Process exited after 0.04649 seconds with return value 1701
Press any key to continue . . .
```

(1) 5. Your program allows users to enter an array of `n` integers, where `n` is entered by the user and less than or equal 10. Your program should then print the sum of squared of all even integers.
Hint: It is possible to use `malloc()` to create a dynamic array.
Below is an example, in which number 5 is the value of `n` followed by 5 values of elements:

```
5
1
2
4
1
3

OUTPUT:
20
--------------------------------
Process exited after 0.04649 seconds with return value 1701
Press any key to continue . . .
```

(1) 6. Your program allows users enter a long string `o` and a short string `p`. The system finds the occurrences of `p` in `o` and replaces them by the reversed of `p`. It then prints out the modified string `o`.
Below is an example:

```
ccbadefgba
ba

OUTPUT:
ccabdefgab
--------------------------------
Process exited after 0.04649 seconds with return value 1701
Press any key to continue . . .
```

(1) 7. Your program should allow users to find the two-digit number(s) that appear(s) **the most** in the array of 07 integers. Then your program should print out the found two-digit numbers.
Below are 03 examples to show how the program works:

Example 1: One most appearing two-digit number

```
1
3
5
7
12
12
12

OUTPUT:
12
--------------------------------
Process exited after 0.04649 seconds with return value 1701
Press any key to continue . . .
```

Example 2: No two-digit number

```
1
3
5
7
9
1
2

OUTPUT:
no two-digit number
--------------------------------
Process exited after 0.04649 seconds with return value 1701
Press any key to continue . . .
```

Example 3: More than 01 most appearing two-digit numbers

```
10
10
1
2
3
12
12

OUTPUT:
10 12
--------------------------------
Process exited after 0.04649 seconds with return value 1701
Press any key to continue . . .
```

(1) 8. Your program should allow users to enter a character, then it should display the location of that character in the ASCII table and its octal format with 04 number places.
Example:

```
a

OUTPUT:
97 0141
--------------------------------
Process exited after 0.04649 seconds with return value 1701
Press any key to continue . . .
```

(1) 9. Your program should allow users to enter a positive integer number `n`, compute the reversed number of `n` (called `nrev`) then print out 02 values: `nrev` and `n + nrev`.
Example:

```
3089

OUTPUT:
9803 12892
--------------------------------
Process exited after 0.04649 seconds with return value 1701
Press any key to continue . . .
```

(1) 10. Your program should allow users to enter an integer number `n`, then it should display 03 smallest prime numbers which are greater than `n`
Examples:

```
200

OUTPUT:
211, 223, 227
--------------------------------
Process exited after 0.04649 seconds with return value 1701
Press any key to continue . . .
```

——— END OF QUESTIONS ———