University of Vavuniya

First Examination in Information Technology - 2020

First Semester – April/May 2022

IT1134 Fundamentals of Programming(Practical)

Answer All Questions

Time Allowed : Three hours

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1. Write a program in C++ to repeatedly prompt the user to enter a number and find the average of positive numbers entered by the user. Prompt must end and display the average only when the entered number is negative.

   Sample Output:

```
Enter number1:24
Enter number2:45
Enter number3:56
Enter number4:34
Enter number5:87
Enter number6:-5
Average of positive numbers you have entered is:  49.2
```

[20%]

2. Write a program in C++ with the following guidelines:

   (a) Define the **void** type function `findSum(int array [], int sizeOfArray, int &sum)` to find the summation of an integer array.

   (b) Define the **void** type function `findAverage(int array [], int sizeOfArray, int &average)` to find the average of an integer array.

   (c) Define the **void** type function `findMin(int array [], int sizeOfArray, int &minimum)` to find the minimum of an integer array.

   (d) Define the **void** type function `findMax(int array [], int sizeOfArray, int &maximum)` to find the maximum of an integer array.

(e) At the `main()` function,

i. read the size and the elements of an integer array.

ii. find the summation. average, minimum, and maximum of the array using the functions defined above.

Sample Output:

```
Enter the size of the array:5
Enter number1:15.6
Enter number2:17.3
Enter number3:13.9
Enter number4:29.5
Enter number5:33.6
Summation of the array:109.9
Average of the array:21.98
Minimum of the array:13.9
Maximum of the array:33.6
```

[30%]

3. Write a program in C++ with the following guidelines:

(a) Define a struct **Author** with the following properties:

i. three variables *name* **(string)**, *mail* **(string)** and *gender* **(char)**.

ii. a function *readAuthor()* to read the details of Author.

iii. a function *printAuthor()* to display the details of Author.

(b) Define a struct **Book** with the following properties:

i. three variables *title*(**string**), *pages*(**int**) and *price*(**float**).

ii. a struct *author*(**Author**).

iii. a function *readBook()* to read the details of Book and Author.

iv. a function *printBook()* to display the details of Book and Author.

(c) Define the *main()* function to do the followings:

i. Read details of the following books.

Title	No of Pages	Price	Author's name	Mail	Gender
Java	300	400	David	david@books.com	M
C++	450	500	James	james@books.com	M
C#	600	800	Malini	malini@books.com	F
PHP	700	900	Amalka	amalka@books.com	F
JavaScript	200	300	David	david@books.com	M

ii. Print details of the books.

iii. Print details of the books with the following conditions:

A. the books which price is greater than 500.

B. the books which number of pages are less than 500.

C. the books which are written by David.

D. the books which are written by female authors.

Sample Output:

```
Enter number of books:5
Enter title:Java
Enter number of pages:300
Enter price:400
Enter author's name:David
Enter author's mail:david@books.com
Enter author's gender:M
Enter title:C++
Enter number of pages:450
Enter price:500
Enter author's name:James
Enter author's mail:james@books.com
Enter author's gender:M
Enter title:C#
Enter number of pages:600
Enter price:800
Enter author's name:Malini
Enter author's mail:malini@books.com
Enter author's gender:F
Enter title:PHP
Enter number of pages:700
Enter price:900
Enter author's name:Amalka
Enter author's mail:amalka@books.com
Enter author's gender:F
Enter title:JavaScript
Enter number of pages:200
Enter price:300
Enter author's name:David
Enter author's mail:david@books.com
Enter author's gender:M
```

```
The details of books:
Book Title:Java
No of pages:300
Price:400
Author's name:David
Author's mail:david@books.com
Author's gender:M

Book Title:C++
No of pages:450
Price:500
Author's name:James
Author's mail:james@books.com
Author's gender:M

Book Title:C#
No of pages:600
Price:800
Author's name:Malini
Author's mail:malini@books.com
Author's gender:F

Book Title:PHP
No of pages:700
Price:900
Author's name:Amalka
Author's mail:amalka@books.com
Author's gender:F

Book Title:JavaScript
No of pages:200
Price:300
Author's name:David
Author's mail:david@books.com
Author's gender:M
The details of books which price is greater than 500:
Book Title:C#
No of pages:600
Price:800
```

```
Author's name:Malini
Author's mail:malini@books.com
Author's gender:F

Book Title:PHP
No of pages:700
Price:900
Author's name:Amalka
Author's mail:amalka@books.com
Author's gender:F

The details of books which number of pages are less than 500:
Book Title:C#
No of pages:600
Price:800
Author's name:Malini
Author's mail:malini@books.com
Author's gender:F

Book Title:PHP
No of pages:700
Price:900
Author's name:Amalka
Author's mail:amalka@books.com
Author's gender:F

The details of books which are written by David:
Book Title:Java
No of pages:300
Price:400
Author's name:David
Author's mail:david@books.com
Author's gender:M

Book Title:JavaScript
No of pages:200
Price:300
Author's name:David
Author's mail:david@books.com
```

```
Author's gender:M

The details of books which are written by female authors:
Book Title:C#
No of pages:600
Price:800
Author's name:Malini
Author's mail:malini@books.com
Author's gender:F

Book Title:PHP
No of pages:700
Price:900
Author's name:Amalka
Author's mail:amalka@books.com
Author's gender:F
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[50%]