Victoria University of Bangladesh

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Course title : Computer fundamentals & programming Techniques -

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Program : BBA

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(Ans: to the Q. no. 2)

(B)

Write Algorithms:

Step 1 Define your algorithms input: many algorithms take in data to be processed. e.g to calculate the area of rectangle height and rectangle width.

Step 2 Define the variable algorithms variables allow you to use it for more than one place. We can define two variables for rectangle hight and rectangle width as HEIGHT and WIDTH. We should use meaningful variables name e.g instead of using H & W

Step 3 Outline the algorithms operations: use input for computation perpose, e.g to find area of rectagle multiply the HEIGHT and WIDTH variable and storee

the value in new variable. An Algorithms operations can take the form of multiple steps and even branch, Step 4 Output the results of your Algorithms: In case of area of rectangle output will be the value stored in variable AREA if the input variables described a rectangle with a HEIGHT of 2 and a WIDTH of 3, the algorithm would output the value of 6.

Flowchart :— The first design of flowchart goes back to 1945 which was designed by John Von Neumann. Unlike an algorithm, flowchart uses different symbols to design a solution to a problem. It is another commonly used programming tool.

* Algorithm & Flowchart to find the biggest from the given three numbers

Algorithm

Step 1 Start

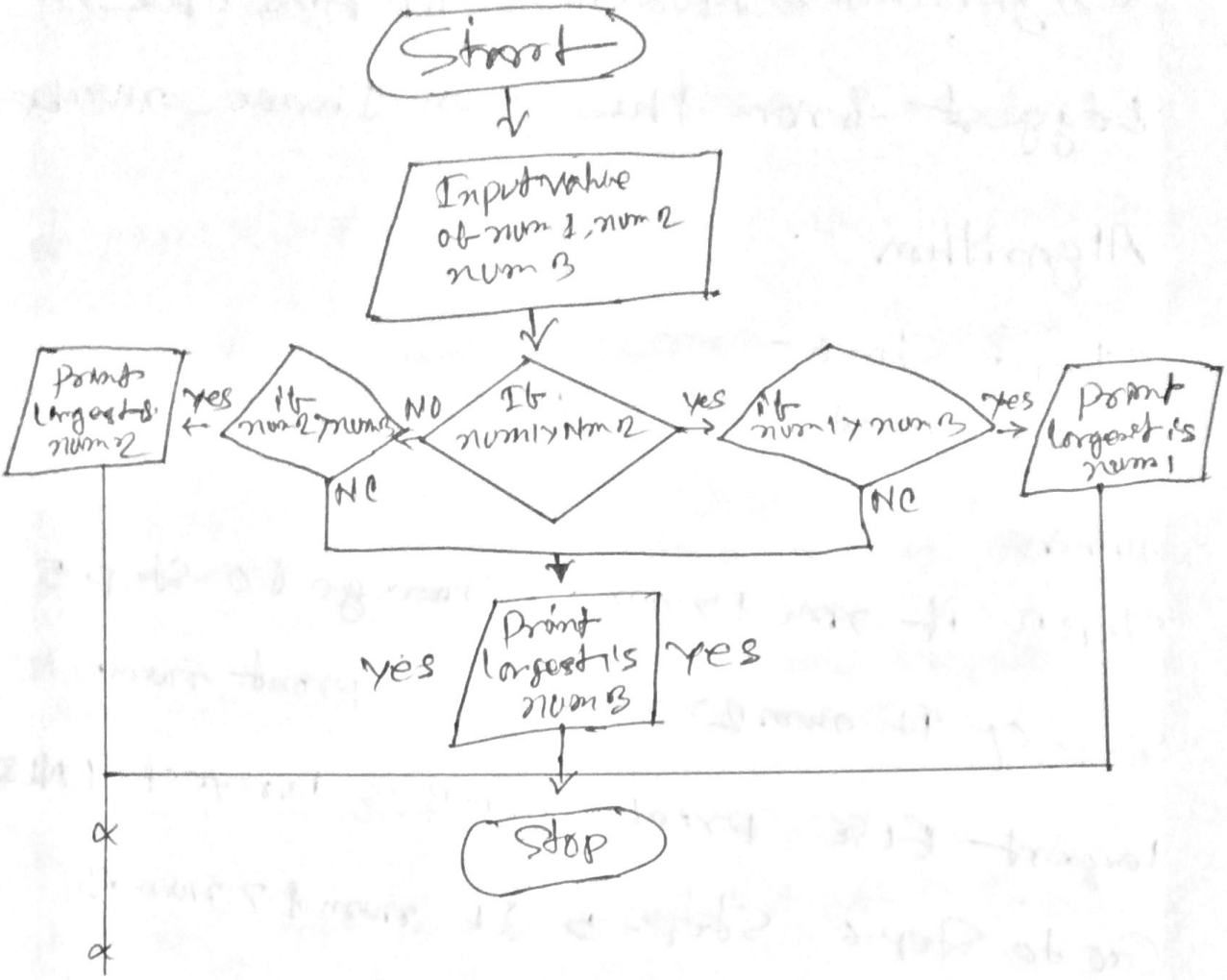
Step 2 Read three numbers say num 1, num 2, num 3

Step 3 If num 1 > num 2 then go to step 5

Step 4 If num 2 > num 3 then print num 2 is largest Else print num 3 is largest ENDIF Go to Step-6 Step-5 If num 1 > num 3 Then print num 1 is largest ELSE print num 3 is largest

ENDIF

Step-6 Stop


Start
Input value of num1, num2 num3
If num1 > num2
yes
NO
If num1 > num3
yes
Print largest is num1
Print largest is num2
If num2 > num3
NC
NC
Print largest is num3
yes
yes
Stop

(a) Write a c-program to find the biggest from the given three numbers.

Example

Input

Input num1 : 10

Input num2 : 20

Input num3 : 30

output

Maximum is 30

```
/**
* C program to find maximum between three
numbers using conditional operator
*/
#include <stdio.h>

int main()
{
int num1, num2, num3, max;

/*
* Input three numbers from user
*/
printf("Enter three numbers!");
```

```
scanf("%d %d %d", &num1, &num2, &num3);

/*
 * If num1 > num2 and num1 > num3 then
 *    assign num1 to max
 * Else if num2 > num3 then
 *    assign num2 to max
 * else
 *    assign num3 to max
 */
max = (num1 > num2 && num1 > num3) ? num1:
    = (num2 > num3) ? num2 : num3;

printf("\nMaximum between %d, %d and %d = %d",
num1, num2, num3, max);

    return 0;

}
```

Sample Output :

```
Enter three numbers : 10
20
30
Maximum between 10, 20, and 30 = 30
```

(Ans: to the Q. no. 5)

(a) Algorithm :— Algorithm can be defined as: "A sequence of activities to be a processed for getting ~~desi~~ desired output from a given input. webopedia defines an algorithm as: "A formula or set of steps ~~for~~ for solving a particular problem. —

Flowchart :— the blowchart is a diagram which visually presents the blow of data throgh processing systems. This means by seeing a blow chart one can know the operations performed and the sequence of this operations in a system. —

(D) Defference Algorithm and flow chart

Algorithm	Flowchart
An algorithm is a step-by step method to solve problems. It Includes a series of rules or Instruction in which is the program	A Flowchart is a pictorial representation of an algorithm. It uses different patterns to illustrate the operations
Algorithms are complicated to understand.	Flowchart with the help of various graphic patterns. are easier to understand and more user friendly.
An algorithm is just written in plain text, It does not use any kind of geomatical diagram.	This type of diagram makes use of defferent pattons shapes, and Standard symbols
Algorithm are mainly used in mathematics and computer science.	Flowchart can be used in various domains to illustrete a program.
It discribes the concept of decidability.	Flowcharts are used to document design, and analyze program.
This mathod demands the knowledge of a computer programming language.	Users with no knowledge of computer programming language can still use this method.

(c)

* Define RAM and ROM

* RAM :— (Random access memory) Ram is a computer's short-term memory, where the data that the processor is currently using is stored. your computer can access RAM memory much faster then data on a hard disk, SSD, or other long-term storage device, which is why RAM capacity is critical for system performance. RAM stands for random access memory, and it's one of the most fundamental elements of computing. RAM is a temporary memory bank where your computer stores data it needs to retrieve quickly.

* ROM :— Read-only memory is a type of non-volatile memory used in computers and other electronic devices. Data stored in ROM cannot be electronically modified after the manufacture of the memory device. —

Read-only memory is useful for storing software that is rarely changed during the life of the system, also known as firmware. Software applications for programmable devices can be distributed as plug in cartridges containing ROM. —

(Ans: to the B.20.03)

(i) $(1001.111)_2 = ?_{10}$

$1001.111_2 = 1\times2^3 + 0\times2^2 + 0\times2^1 + 1\times2^0 + 1\times2^{-1} + 1\times2^{-2} + 1\times2^{-3}$

$= 8 + 4 + 2 + 0 + 0.5 + 0.25 + 0.125$

$= 14.875_{10}$ (Proved)

(ii) $(7601.153)_8 = ?_{10}$

$7601.153_8 = 7\times8^3 + 6\times8^2 + 0\times8^1 + 1\times8^0 + 1\times8^{-1} + 5\times8^{-2} + 3\times8^{-3}$

$= 3584 + 384 + 0 + 1 + 0.125 + 0.078 + 0.005$

$= 3969.208_{10}$

⑥ C-program to find the average from the given five numbers.

```
1. int main (). {
2. float a, b, c, d, e, S, avg;
3. printf ("please Enter 5 Numbers:");
4. scanf ("%f %f %f %f %f", &a, &b, &c, &d, &e);
5. S = a+b+c+d+e;
6. avg = S/5;
7. printf ("\n the Average is: %f", avg);
8. return 0; }
```

(Ans: to the Q.no. 01)

* Converts the given numbers using BCD code!

(A) $(AB0189.765)_{16}$?

$AB0189.765_{16} = A\alpha16^5 + B\alpha16^4 + 0\alpha16^3 + 1\alpha16^2 + 8\alpha16^1$
$+ 9\alpha16^0 + 7\alpha16^{-1} + 6\alpha16^{-2} + 5\alpha16^{-3}$

$= 10\alpha16^5 + 11\alpha16^4 + 0\alpha16^3 + 1\alpha16^2 + 8\alpha16^1$
$+ 9\alpha16^0 + 7\alpha16^{-1} + 6\alpha16^{-2} + 5\alpha16^{-3}$

$= 10485760 + 720896 + 0 + 256 + 128$
$+ 9 + 0.4375 + 0.0234375 + 0.001122$

$= 11207049.4621_8$

(b) $(10234.625)_8 = ?_{16}$

$$10234.625_8 = 1\times8^4 + 0\times8^3 + 2\times8^2 + 3\times8^1 + 4\times8^0 + 6\times8^{-1} + 2\times8^{-2} + 5\times8^{-3}$$

$$= 1\times4096 + 0\times512 + 2\times64 + 3\times8 + 4\times1 + 6\times0.125 + 2\times0.015625 + 0.00195$$

$$= 4096 + 0 + 128 + 24 + 4 + 0.75 + 0.1002 + 0.00975$$

$$= 4252.86895_{16}$$