Autumn - 18

Ans to the ques No-1

a) The logical and mathmatical model of a particular organization of data is called a data structure.

difference between Data and information

Data	Information
1) Data means value or set of values	1) data with attributes its
2) data is the ~~individual~~ individual figures, number on graphs	2) Information is processed data.

b) There are three types of control structure.

1) Sequential Flow:- Unless instruction are given to the contrary, the modules are executed in the obvious sequence.

2) Selection logic:- Selection logic employs a number of condition which leads to a selection of one out several alternative modules

3) Iteration logic:- Iteration logic starts with a Repeat statement and is followed by a module.

Ans to the question No 2 (a)

a) Disadvantages of linear array

i) Insertion, deletation are costly in arrays as elements are stored in contiguous memory

ii) Size of the declared array is more than the required size then, it can lead to memory wastage

b) Binary Search Step

i) Set BEG = 11 ; END = 99, MID = INT(BEG+MID /2

ITEM = 88

ii) Repeat step (iii) and (iv) while BEG ≤ END and ~~DATA[END]~~ DATA[MID] ≠ ITEM

iii) If ITEM < DATA[MID] then:

Set END = MID - 1

Else,

Set BEG = MID + 1

iv) Set MID = INT((BEG + END) / 2)

v) If DATA[MID] = Item then

Set LOC = MID

Else,

Set LOC = NULL

vi) Exit

4) A multidimentional array is an array with more than one level of dimention.

A(-5:5, 3:33) 2 dimention array length

$L_1 = 5-(-5)+1$

$= 11$

$L_2 = 33-3+1$

$= 31$

A array length 11, 31

A contains $L_1 \cdot L_2 = 11 \cdot 31$

$= 341$ elements.

B(3:10, 1:15, 10:20) 3 dimentional array

P.T.O

$L_1 = 10 - 3 + 1$

$= 8$

$L_2 = 15 - 1 + 1$

$= 15$

$L_3 = 20 - 10 + 1$

$= 11$

B contains $L_1 \cdot L_2 \cdot L_3 = 8 \cdot 15 \cdot 11$

$= 1320$ elements

Ans to the ques No-3

A stack is a list of elements in which an element may be inserted or deleted only at one end, called ~~the~~ the to of the stack. ~~Two basic~~ Two basic operation associated with Stacks

i) Push → Insert element ii) Pop → ~~delete~~ delete an element

b) Left^ procedure used to insert an element at the top of the stack. Basically this function belong to <Stack> header file. The element a is added to the stack container and the size of the stack is increased by 1

Right^ procedure is used to pop or removed an element from the to of the stack container. The content from the top is removed and the size of the container reduced by 1.

C) Application of stack

i) Evaluation of Arithmatic

ii) Backtracking.

iii) Delimiter checking

iv) Reverse a data.

v) Processing a function call.

infix to postfix

((A+B)/D)^((E-F)*G)

Symbol	Stack	Postfix
(	(	
(	((	
A	((	A
+	((	A
	(+	A
B	(+	AB
)	(+	AB
	(	AB+

Symbol	Stack	Postfix
A	(A	AB+
D	(A	AB+D
)	(A)	~~ABAB~~AB+D/
^	^	AB+D/
(	^(	AB+D/
(	^((	AB+D/
E	^((	AB+D/E
-	^((-	AB+D/E
F	^((-	AB+D/EF
)	^((-)	AB+D/EF-
+	^(+	AB+D/EF-
G	^(+	AB+D/EF-G
)	^(+)	AB+D/EF-G+
		AB+D/EF-G+^

Ans:- AB+D/EF-G*^

Ans to the ques No-4

a) Big O notation is a mathmatical notation that describe the ~~limitation~~ limiting behaviours of a function when the argument tend toward a particular value.

Best case:- the combination of input data for which the complexity $f(n)$ minimum.

Worst case:- The combination of input data for which the complexity $f(n)$ maximum.

Average case:- The combination of input data. for which the complexity $f(n)$ is not maximum and not minimum.