Introduction

- ## Structured data type

    There are data types which have more than one data object.

Attributes of SDT

- Number of components

  – Number of components can be fixed . They are fixed at compile time.
  – Number of components can be variable (runtime) ex. Linked list, pointer.

Type of each component

- A. Homogenoeous – data type of each component is same.
  int a[10];
  - B. Heterogeneous- Components of multiple data type can be stoerd.

  Ex. Struct
  {
  int age;
  float pension;
  };

- Name used for accessing the components

  Ex.

  int a[8]

a[7] subscript
a[6]
a[5]
a[4]
a[3]
a[2]
a[1]
a[0]

- Upper limit on component- whenever we are using variable structure data type then we have to specify the upper limit of the component.

- Orzanization can be linear or multidimensional.

Implementation of various data datatypes.[mdu 07,08]

- Vector or one dimensional arrays.
- Attributes of a vector are as follows.
  - Number of components : fixed at the compile time.
  - Data type of each component: homogeneous
  - Subscript to be used in selection component
  - Storage representation
    - Head is made of vector name, LB<UP,Type,size.

      rest is data partition

vector
Lower Bound
Upper Bound
Data type
Size
a[lb]
a[lb+1]
-
-
A[ub]

Address calculation of one dimension array.

- Address of ith location=B+(i-LB)*E
- Ex v= array of[-2,-----5] of int
- Find the address of V[3]
- Base address is 1000.
- Address of v[3]= 1000+[3-(-2)]*2=1010

Array in 2 dimension.

LB1 lower bound subscript1
Ub1 upper bound on subscript 1
Lb2 lower bound on subscript 2
Ub 2 on subscript2
M[1,-1]
M[1,0]
M[1,1]
M[2,-1]
M[2,0]
M[2,1]
M[3,1]

Calculation of address in 2D

- Int a[3][3];
- Base address=1000
- a[i][j]= B+(i*n+j)*E= 1000+(2*3+1)*2 =1014