## Assignment - 4

i) Call by value: In call by value parameter passing method. The copy of actual parameter values are copied to formal parameters and these formal parameters are used in called function. Ex: #include Zstdio. h> void main () int rum, num 2; void swap (int, int); num 1 = 10; printf ("Before swap: num! = 1/d, num 2=1/d, num! num s); num 2 = 20% swap (numi, numa) printf ("After swap: num! = 1/d, num 2= 1/d, num 1: num 2); void swap (inta, intb) & int temps temp =a; a=b: b=temp;

Call by reference: In call by reference parameters passing method, to memory location address of the actual parameters is copied to formal Parametric. This adress is used to acess the memory locations of the actual parametric is called function. Hincludezstdio. kvoid main () int num 1, num 2; void swap (int', int'); num 1 = 20; num 2 = 20; printy ("Before swap: num 1=:/d, num 2=1.d, num1, num2) Printf ("After swap i num 1 = 1.d; num 2 = x.d; num 1, num 2). swap (num , numi); void swap (Inta, inta) ( int temp; temp = ta; \*a= \*b \* b = temp;

#include 2 stdio. h> 1. 人名英格兰斯 12 · 新名。 (1986) Famous man I commit the void main () - Para anarjiti char a [5] [20]; in rimital int is ; printy ("enter the names"); 36 - many) fi said for (i=0; i25; i++) { i restiii scarf ("1.5", da [1]); print (" sorted list of names"); round immediate named for (i=65; i <122; i++) for (j=0; j<5; j++) lif (a (j) [o] = = i) print (" In .1. 5") & [j]); it resolves it which there felf inwas to let intial Output: Enter the names: chinni Nani ((1) i somed je "bas Mifriang Sunny Cherry Sorted list of names; Banni Cherry

```
3) #include zstdio.k>
   int fibonacci (int num) !
   (num = = 0)
    return o;
                                        stance we win " he we
     elie if (num = = 1) {
                                           The state of the state of
      return 1;
     return fibonacci (num-1) + fibonacci (num-2))
                                            is partition of
    int main ()
                                         allifer in eraing profits
     int num;
      Print ("enter the numbers");
     scanf (".td", & num);
for (Inti=0; i cnum; i++)
      print + ("1.d", fibonacci (i))
     return o;
                                                capita following sold
4) String handiling functions:
 C provides a set of standard library functions for handiling
 strings, which are defined in the string. In header file . some of the commonly used string handling functions in a include.
o stropy ():
  This function is used to copy find the length of given string
```

2) strlen (): This function is used to copy one string to another. 3) streat (): This function is used to concatenate two strings. This function is used to compare two strings. It returns of the 4) strcmp() strings are equal, a negative value if the first string is reficographically less than second string, and a positive value it the first string is lexicographically greater than the second string. This function is used to search for the first occurance of a given character in a string. str str (): This function is used to search for first occurance of a given substring in a string. There are several other string handiling functions in c, such as strepy(), streat(); strenp() lete. These functions work similarly to the functions mentioned above, but they accept an additional arguement specifying the maximum novel charecters to be used.

```
5) program to soit the given set of strings
#include Zstdio.h>
                                       in the state of the state of the
# include & string . h >
# define Max - STRINGS 10
# define Max - LENGTH 50
void soot strings (char strings [][Max length]) int n)
 char temp [MAX LENGTH];
for (in+1=0; i < n-1; 1++)
 for (intj=o;j=n;j++)
 if (stremp (strings (i), strings (j))=0)
 d stropy (temp, string [i]);
   stropy (strings [i], strings [j]);
                                       who were the middle of the
    stropy (string [1]) temp);
                                             Francisco March
                                             and January Mark Sugar
 int main ()
 char string [Max: STRIGS] [MAX_LENGTH];
 print ("Enter no. of strings");
 scary ("1.d", 2n);
 printy ("fater 1d strings (n', n);
 for (Int 10=0; icn; i++)
```

4. 14. 1 4 4 4 4

```
scourt ("1.3", strings (i)))
                              sort strings (strings, n);
                               exist pign it present similarity
 print (" sorted strings. in"),
                              At all and the second
  for (inti=oji=n; i++)
                               a Alfred Anna State of the Hold State
  prints ("1.510", strings (1));
                                the formular project of the
  return o'
2) In, Programing a function is a block of code that performs
 a specific task. The structure of a user defined function in c
 language typically includes the following elements.
 1. The function declaration, which includes the return type, function
   name, and list of parameters (if any) enclosed in parameter
2. The function body, which confains the statement that are
   executed when the function is called
 for example, the following is a simple function in in
   int add (inta, intb)
                              Till - 1 18 mas
                                TOWART HE - DON'T Pring
   intc = a+b;
                             Commission of the first
   return c)
```

Arguements: In the above example, the variables are used to are the arguements passed to the function They are used to passed to pass data into the function. When the function is called, The values passed as arguments are are used to perform the operations defined in the function and to an the return value is to pass the results back to the calling code. 7) # include cstdio. h> mainer led and period as insured a parameter to intalio], nji; of the mileste of a great of age flact ang, sum = 0 s let il animi glange ga Print ("Enefer array size"); scanf ("vid", en); Printy ("Enter array elements"); for (i=0; i=n; i++) { and my wholes both ign Scant ("1.d", ea (1)); in the stop our or sum \* = a [i] Property of the state of the st print ("sun = " led", sum); ang = (-110a+) sum [n; Printy ("Average = 7.7, avg). y a magazin

8) Self referential structures: self referential structures are those structures that have one or more pointers which point to the same. type of structure as their member. struct. rode é allo grane a standagil int data 1; char darta 2; struct node \* link; -> The point to consider is that the pointer should be intiolized properly before accessing, as by default it contains garbage value.

The plays a very important role in creating other data The reduces the complexity of the program. By using this, we can easily implement these data structures efficiently. Nested Structure: Mested structure is a structure within the structure. One structure can be decleared inside another structure can be declared inside another structure in the same way structure. members are declared inside a structure. It can be used to represent a wide varioty of data. These are often in using programing to store data such as the pointers on a 2D grid.

- > There are often used to represent hierarchical data, such as the content of the file system.
- > Nested structure can be used to create complex data types
  that are easy to understand and use.
- Dynamic memory allocation enables the programer to allocate char dayla so memory at runtime.
- malloc stands for memory allocation. The function → Halloc (): reverse a block of memory of the specified number of bypes. Syntaxistas ti Harofab ped en prisono orafed plingors

ptr = (cast - type\*) malloc (byte sije) sudav spodios Calloc (c) calloc stands for contiguous allocation method in C is used to dynamically allocate the specified no of blocks of memory of the specified type. 

ptr = (cast-typet) calloc (n, élement, sije); syntax:

It space is insufficient allocation till and returns a null pointer. realloc ()

reallor stands for re-allocation. It the dynamically allocated memory is insufficient or more than required;

```
you can change the size of previous allocated memory
using this function syntan:
  ptr = realloc (ptr, x);
                        to be a single of the second
 for (i=5; icn; ++i) {
 ptr [i] = i+1;
 printf ("elements of array are");
                       - zamorforg podkino jednos oros
 for (1=0 ; ich ;++1) {
                        pende to be builde
                         ((Ci) x+q, b.1-1) t+ning
              and of the first first figure was seld the
 free (ptr);
               ing on a structure of a plant of
 return 0;
               I am some and in me all has soid
Output:
                      and cominh so base of the
 enter no of elements: 5
                      would be publicated to be
 Memory is allocated.
 elements of array are: 11, 1, 3, 4,5
 enter new size of array: 10
memory is reallocated

The elements of array are: 1,2,3,4,5,6,7,6,9,10.
```

- These are used to describe the features of a variable. There features basically include the scope, visibility and diffeting which helps us to trace the existence of a particular variable during the nurtime of a program.
  - This is the default storage far all the variables declared inside a function or a work. Hence, the key anord auto is rarely used while writing programs. Auto variables can be only accessed and not outside them:
- This class simply tells us that the variable is defined else cohere and not within the same block where it is used. Basically, the value is disassigned to it in a different block and this can be changed in a different block as

well.

- This used to declare static variable which are popularly used while writing programs in C. There have the property of preserving their value even they are out of susper.
- This class declares register variables that have the same functionality as that of the auto variables. The only different is that the compiler tries to store this variables if a tree registration is available.

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A part of the
1) #include cstdioik>
  #include estring. L>
                      is almost wind what his what " you
  # define Max - Books 10.
   struct book
                      Alle for wall is a feed Alafte France
  lint access - no;
                      White for good is the state of the state of
   char cuthor [50];
                      form compared before some bung
   char fitle [100];
   Int year;
   float price;
                                              10 midi
   int main ()
    struct book library [MAX-BOOKS];
   int i, n;
                             : foreveryon said known a) (1)
   printf ("Enter no of Books"):
   scant ("1.d", kn);
   for (i=0; icn; i++) prilicogn for loto soil - brown mos
   printy ("Enter details for books I'd (n)
   printy ("Access Number:");
                                             i richapi
  scart ("-1.d', & library (i). access-no);
printf ("Author");
  scant (" T's; labrary [:]; author);
printf ("title");
                               water of 11 Vy to form
  scanf (".1.5", library (1); fitle);
 printf (" year of publication: ")
 Scanf (" .).d", 2 library (i). Price);
prints ("In library contalogue. In"),
```

for (i=o; icn; i++) printf ("Enter details for book Y.d In, it); printf ("Acess Number: 1-/dln, library [i], acess no); Prints ("Author: 4.5 In", library [i], title); 1 3 P. 18 Printf ("Title: 1.5 la", library (i), title); 1117 - 64 Prints ("price: 1.24 In ; library [i] 1 price); return o;

12). Command line arguement:

These are given after the name of the program in command - line shell of operating systems. Command live arquements are possed to the main () nethod.

syntax: int main (intarge, char \* avg v[])

arge counts the number of arguements on the comand lie and any v[] is a pointer array, which holds pointers to. the type char which points to the arguments.

#include cstdio. 1 > ch Kriger 1883 som ell på 1864 blevet ord the subject of the if (arge > = 2) 2 Carn on the printf (" The arguments are: ");
for (i=1; ic arg e; i++) { in irly in na the printf ("1.3/t" ang v (i)); ; e ; o rig . e eit prints ("argument list is empty"); conservation of the many through the stay return 0 1, : Yorkserldes + N. oil to about 19 Output : Arguement List 1 empty. 3 ca numa tai ्रार्थ विकासी भी the the whole his u) Pointer: It is a variable that stores the memory advers of another us its value pointer is created with the \* operator. Tere are few operations that are allowed to perform on pointers. \* Increment | Decrement: Increment: When pointer is incremented, it actually

increments by the number equals to the & then added to pointer # Include & stdio. L> int main () { int nous . . int ptri, ptr 2; Ptr 1= an; Ptr 2 = &n; Ptr 2 = ptr 2 + 3; Printf ("Pointer Ptr2: 1.P", ptr 2); Output: Pointer Ptr 2 = 0 x 7++ (a) +3 das subtraction: Hinchede estato. h> int main () { intn=4: int + ptx 1) + ptx 2; ptr 1=10; phys = An; Plv 2 = ptv 2 - 3; prints (" pointer ptr 2"1. p", ptr); Astorno; · Freday grant 4) File: It is collection of data stored in the sciendary memory! it is used to storing informations that can be passed by programs File mode is cotegorized into 4 type of modes.

Create mode: > Create mode: Opens the specified file and positions is to the beginning? To create a new file, open the file in create troods user can't read, position a file opened with create mode -) Read mode: ( ist roge of some still retained from the reading of deata. Read mode opens afile to the beginning. 3 Update mode: This mode allows both reading & writing of data. update mode life opens a file to the beginning. This allows writing data to the end of a file. User can't read position or rewind a tile opened with append mode. (") on all ( 's of the copies the trop ? ... ) thing ( Crathed melon) # Include Lstdiorh> ( ( totat ) ... social int main () FILE \* fotal, \* totr 2;

char tile same [100]. () : i con ator providence : 1 Printy-6' enter the name to open 10") involved book tot filialiticume)? tetri = (tile name "+"); of Catety = Now of constitions some of hertipage with enough print+ ("can't open Hile! x.s. /a" , filenoune); exit (o) ojo: di o berego alija milizari, base timo esco printy ("enter file name to open for"); about how! search (you spirit Hernance) of slip a mayor about sixt tobre 2 = - Hopen (tilename, "coid); on in a bow, book if (fptz = = Null) { : sham shabyi) print + ("can't open the "so In"; Herane) this side exit (a)s. c=fgetoCAPHI); entite (c) = reorditor in fill in according tide i down brough . c = fgete (tptri)1 walk y bos Famos sall printle ("In content copied to .1.5", Herand; was bushed dis fedore (fetri); felore (tota), Education of the returno, ( ) store fri

18) F scanf (); This function is used to read formatted input from a file. It works similarly to the scanf() function but it takes an addition file pointer as the first arguement for ex, the following code reads on integer, a string and a float from a file called "data. At" FILE + +P) int i; char str [100]; FP= f open ("data txt.", x); F scant (ep, yed 7.57.7", b; str, &r); printt (Read ; -1-d 1/3 11. + 1, str, t); f dose (FP); F printf (); This function is used to react a line of text from a file. It takes a file pointer, a buffer to store the read. text, and the Maximum no. of charecters to read as arguements. For Ex: The Johnwing code reads a line of text from a file char str [] = "Helloworld", float P = 3:14; FP = Jopon (data. +x+, 1w"); + printf (FP, 1,d 1,5 %, 1,1,5tr, +); F close (FP);