Assignment - y

(2

```
(1) call by value!
   In call by value parameters
                                      passing
                                                RE
method, the copy of actual parameter,
                                                 oc
 values are copied to termal perometer,
 and these formal parameters are used in
 called function.
 Ex: Hinclude c stdio. hs
  void main () {
    ant numi, numi;
     void swap (int, int);
       num1 = 10;
       num 2 = 20;
   printf( "Botoro swap : num 1: T.d. num 2 = T-d", num,
                                           numi);
   swap(num 1, num2);
    print("After swap: num1=1/d, num2=1/d", num1,
                                           num2);
   void swap (into, intb) {
      ent temp;
      temp: a;
       0 = 6;
        b: temp;
```

```
e call by reference:
  In call by reference parameters passing .
method, the memory tocation address of the
actual parameters is applied to formal parameters.
 The address is used to access the memory
 wations of the actual parameters in called
 function.
 Fx: # Encludes stdio. h>
    void main() {
    int numi, hum 2;
    void swap cint, int );
       num 1 = 20.
       num2 = 20;
  printf ("Before swap: num 1= 1.d, num )=1.d", num 1,
   swap (4 numi, 4 numi);
    printf ("After swap: num: -1.d, num: 2:1d, num;
              (-- minst : all imami):
    void swap (int*o, int*b){
      int temp;
       temp = *a;
        * a = * b;
        *b = temp;
```

mi,

```
1. # include astdio. ho 19 [870 . [80 [870]
 int a (10) (10), b(10) (10), c(10) (10), ti,j, m, n, p,q,
   printe ("rows & columns for A:\n")?
     scant (2-1-d-1-d" Am, an);
   printt (" rows & columns for B: In");
     searef (-1-d-1-d", 4p,49);
                          ((a) - & fryet ) Hole
  "H (n==p)" {
   prints ("Input A-W");
    for (=0; icm; i++) { 30+1 185/104/00
     for cj=0; jcn; j++) & ([) (1) d & - b (-) home.
      sound Cy. d', 40 (7) (1);
    print("Input B - In"); & Charles as 1 000)
   for (1=0; 1cp: 1++) & ( (6) (6) (0)
     for c j > 0; j < P; j++) { 1 + 0; 100 < 100 100
       scarrici-1.d", a beijejj);
                    ICA: 8 boo A to muze Thomas
 print co resultant matrix: In");
  for (100; icm) i++) {
                            $ ( pr) (83) 104) el
    for (j=0; j(q; j++) }
                          Citions ( bis thereon
      c (1)(1) = 0:
                                 Carthrage !
      for (1000; 10< 10; 10+1) }
       c (i) (j) + = a (i) (k) b (k) (i).
```

```
((1 x12) (12) x12 = 2
  bout ( , 10 , );
                      3 ( ++ 9 ) tollowed a 1 10 = 8) with
  tor (1=0; )(9: 1++) {
                               7 1 4 post 4
     bricht G.19. ", cciscis);
      byutt (, (b.);
                                   $ Cp019 15
 else prints ("Mainces can't be multiplied!");
         CIME Considered to it 24 " ) thinks
output
                                    CO INVIDENT
 vows and columns for A:
 2 3
 rows and columns for
                       B:
                           wous spinas in set
    3 2
                            appropriation of 17 000
 Input f1:
                           CH offers abulant
  2 -3 4 53 3
                    5.
Input 8:
                                 f () alom biou
3 3 5 0 - 3 4
 resultant matrix:
                     *[001] 2 * ['001] (001] 102 YOU
               CO : LOWING TO ON LOTTED ") HORRE
       22
   - 21
       149.
    159
```

```
(3) & Enclude 2 stdlo. h>
  Ent fibonaccic int num) 1
    of (num >= 0)
     l veturn o;
    else of (nam = = 1) {
      return 1;
                      and withthe skilling it
     else
                          3 Clarkon bot
      return fibonacci (num - 1) + fibonacci (num-1).
          PURE . ( Hat. " dat a grown blow
                          Los a Longer
 int main ()
                         YUM CEMBY
  fint num;
   printf("enter the numbers: ");
    scand ("/d"s, 4 num);
   for Cint iso; icnum; i++)
      printf (""/d", sibonaccici,);
    return o;
 but put:
```

```
(u) string length:
 The string tenth function, strien returns the length
 of a string. If string is empty it returns zero.
 syntax: int strion (const char* string);
 En: Hinclude cstdio. ho
      # "included string.h>
    int main ()
       char str(1000);
       Printf ("enter the string:");
       scont ("7.85", str);
       for (1=0; str(1)!="\0"; 4+9) {
         print(" reight of string: -1 d", "); $3
         return 0;
          enter the string: Gooks
            longth of string: s.
 # string copy:
   The string copy function stropy, while the contents
  of the string encluding null charater, to the string
     char* strepy (crar* tostr, const char* fromstr);
  Ex: # Includo cotdio.n>
       # Includo estring.h>
      int main() {
       char str(20] = "C programming";
       chair strz[20];
```

```
stropy (str2, str1);
  purts (str 2);
       roturn 0;
Output: C programming.
* String compare:
 The string compare function stremp, compares the
two strings weather those string same or not
   "It stromp (const char stri, const char stri);
      # include coldio. h>
      # included string. h > 1 1 1/2 17 1/2 10 10 10
      int main () {
     char stric ] = 'abcd', $trac 8: abcd", str 2() = abcd"
      Int result:
      result = strcmp (str1, str2);
       printf ( %d \no, result);
 output: 0.
* String reverse:
 The string reverce striners function striev,
string given by the wer.
Ex: Hincludecstdioths
    # includer string. hs
     int maines ?
       char s[100];
      print+ ("enter a string:");
      gets (s);
       str reu(s);
       printf (" reversed string : ");
```

```
(5) # millidecoldio.h)
   void main()
  at votustaring in proteins that atherists
     char a(s)(20);
     ent ini;
             their unational hardish (2013
     printf("enter the names:");
     for (1:0; ics; 1++) {
        scanf ("7.5", 40(1));
   printf ("sorted list of names:");
  for (1: 65; 1c 122; 1++)
          for []=0; (cs; )++)
          ( column to south parties of souther
             (1 = < [0][[]0] +;
              printf("x.\n.v.s", &[;]);
       3 nothing defined all the saleties
      Toned before the main tenetion ?
  output:
   enter the names: computer
                    8001
                  Eclipse 1900
  another out is
                Apple
   to munique of
  sorted
        list of names: Apple
   Sees
   temperter attinities well-out to place
   Ectipse
   200.
```

):

(a) Rinction:

A function is basically a block of statements that performs a particular task. esser defined function:

that you use to organise your code in the body of a policy.

ance you define a function, you can call in the same way as the built-in-action and parser function

structure of user defined function:

* Function declaration:

It is also known as a function prototype. If the function definition is mentioned before the main function.

* Function call:

Once defining a function definition, there must be a function call in the program. A function can be called a number of times.

* Function definition:

The body of function definition

insists of a set of statements to perform a specific operation or task. (2: # include cstdio.h) dis void sum(); Il function declaration ons void main () { the sum(); 11 tunction call The de that singuingers with the rest set ? 12 vaid sum () Il function definition action cores direction to acquirectic, it received ent a = s , 6 = 10 , c ; · c = a+b: printf caddition of 1/d and 1/d & 1/d? 0,b,c); out put: 2 car to Donathanis bigu addition of s and 10 % 15. A function can be called either with arguments or without arguments. These functions may or may not return values to the calling. m. functions." and for your for anthropy to 1) Function with no orguments and no setum calling templome natives: when a function has no arguments,

of does not receive any data from the calling function.

syntax: void function();

Void function () {
statements;

3 The million 1 . Clares

* function with arguments but no return value:

when function has arguments, it receives any data from the calling function but it returns no return value.

Syntax: void function(int);

function (x);

void function (int x) {

statements;

function and an armitimus s

* Function with no arguments but returns a volue:

That function that may not take any arguments but returns a value to the calling function.

to a

```
ent function();
syntax:
         function();
          ant tunction() }
            statements;
             return x;
* functions with arguments and returns value.
The functions has arguments, it receives
any data from the calling function and
returns a value.
        int function (int);
syntax:
          function (x);
          ent-function (int x1) {
           statements:
          meturn x; much and
           Stuct node what .
(1) Ainclude c stdio. h>
              t of residence of challes of a
   main ()
    world to fifthind property below
   int after the defect to the total
    float aug, scim=0;
    prints ( "enter oway size: ");
     scanf ("/d; An);
                      מרכתורים כליכני מנותם
     print ("enter away elements: ");
     for (1:0; 9ch; 144) {
     . sconf["vd", ba("]);
```

gam+= afij; print(c"sum> ", sum); ang = (float) sum(n; print("Average > 1/4", avg); a many to many on Aller you (8) Self referential structures: sett referential structures are those structures that have one or more painters which point to the same type of structure, as their member. syntax: struct node ? int data 1; 21 mm and 12 char data 2; struct node *fink; 3; * The point to consider is that the pointer should be initioned property before accessing, as by default it contains garbage value * It plays a very emportant role croating other data structures. * It reduces the complexity of the program

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by using this, we can easily implement these total structures efficiently.

hosted structure:

Mested structure is a structure within the structure. One structure can be declared incide another structure in the same way structure members are declared inside a structure.

- of data.
- these are often used in programing to store data such as the pointers on a 20 grid.
- * These are often used to represent hierarchical data, such as the contents of the file system.
- * Nested structure can be used to create complex data types that are easy to understand & use
- 9) Dyromic memory allocation enables the programmer to allocate memory at run-

malloc ():

m·

The function reverse a black of memory of the specified number of bytes.

Syntan:

ptr: (cost-type*) malloc (bytesize)

ealloc() stands for contiguous allocation acthod in (is used to dynamically actorate the specified no of blocks of memory of the specified type.

ptr = (cost-type *) calloc (n, element-size);

If space is insufficient, allocation fails and returns a null painter

* realloces

realloc() stands for re-allocation. If
the dynamically allocated memory is
entsufficient or more than required, you can
change the size of provious allocated monory
using this function
syntam:

ptr = realloc(ptr, x);

```
#include cstdio. hs
# includer std &b. h>
int main()
  ent * ptr ;
  ent ni?;
   n=5;
 print("enter no of elements: "/d", n);
  ptr = ("int") calloc (n, secof("int));
  "+ (ptr = = NULL) {
    printf("memory not allocated");
      exit (0);
  else { and else is a suppose to almomale
   printf ("memory is allocated");
   € (°=0; °cn; °++) {
     ptr[1]= 1+1
   printf("demonte of away are "");
     for (1:0; (cn; 144) {
        print ("td", ptr("]);
     motor the score, withtis and colera
    printf("enter new size of array: ") ", d", n);
     ptr = realloc (ptr, n * size of (int));
     printf(" momory "is reallocated");
```

for (108; 1cn; 4-11) { ph: 1: 1: 20-40 by printf ("elements of array ore: "); for(1:0), 120; 4-1) { van printf("Vd", ptr(")); Hoc uso free (ptr); stranges by on refused the car return Dy Altanos or sullar (* 1871) the the * 6 Output! enter no of elements :s Hemory & allocated 25 elements of array are: 1;2,3,4,5 SOUT enter new size of away: 10 W memory "s reallocated. 6 The elements of array are: 1,2,3,4,5,6,7,8,9,10 di (10) storage classes: * These are used to describe the features a variable. These features basically include the scope, visibility and life-time which helps us to trace the existance of a particular variable during the runtime wat all common thinks of a program.

c uses y storage classes:

* outo: This is the default storage for ou the variables declared inside a function or a Hock . Hence, the Keyword outs is rarely used while writing programs. Auto variables can be only accessed within the block they have been declared and not outside * Extern:

This class simply tells us that the variable is defined also where and not within the some block where "it is used Bosically, the value is assigned to it in a different block and this can be changed in a different block as well.

* static:

It is used to declare static variable which are popularly used white writing programs in c. These have the property of preserving their value even they are out of suppo.

* Register:

This class declares register variables that have the same functionality as that of the auto variables. The only difference is that the come compiler tries to store these variables in the register of the microprocessor variables in the register of the microprocessor if a free registration is available

(12) Command (ine argument:

These are given after the name of the program in command tine shell of operating systems command line arguments are passed to the mains, method.

Syntax:

int main (int argc, char *argv[])

aroje counts the number of arguments on the command line and argue? is a pointer array, which holds pointers of the type char which points to the arguments.

=x: # include < stdio. h>

int main(int arge, char * argues) {
int i;
if (arge>=2)

for (1=1; "carge; "14) {

printf("1/15/1", argv["]);

} else {

printf("argument test is empty");

} return o;

(13) Output:

Argument list is empty.

(13) Pointer:

It is a variable that stores the memory address of another as its value. Pointer is with the * operator.

There are few operatorsions that are allowed to perform on pointers.

* Increment | Decrement:

→ Increment:

when pointer is indemented, it actually indements by the number equals to the

for which size of the datatype painter. - Decrement: when pointer & decremented, "it actually decrements by the number equal to the size of the data type for which it is a pointe. Ex #includecstdioh? int main () { int a = 22; int *p = a; print ("p: ".u", p): P44; the print ("p++ = 1/4 (n"), p); the por ; some soit stained o if you PO printf("p-- > YUN", p); 1 Timens of all alles outpul! alle ere soit ambierere unt en mer P = 1441900792 D44 = 1441900796 p -- = 1441900792. * Addition: when a pointer is added with a value, the first multiplied by the size of dotatype

```
then added to pointer.
  # include «stdio h>
  int main() {
  ent nou;
   int *ptr1, *ptr2;
   ptri = akin;
  pti2 = 40;
  ptr2 = ptr2-13;
  printf(" Pointer ptrz: 1.p", ptrz);
apput: Pointer & ptr2 > 0x7ffca373doas
             to the harinning to create a
* subtraction:
when a pointer is subrateed with a value,
the value first is multiplied by the size of
the data type and then subtracted from
pointer and with all a strange about sill
Ex Hincludez staio.h
   int main () {
     ent nou;
    int *ptri, *ptr2;
    2 ptri > anisos sur show singir olas
      ptr2 = 4 n;
      ptr2 = ptr2 - 3;
      prints ("Pointer ptrz: Y.P", ptrz);
      return 0;
```

Output: Pointer Ptrz: 0x7ffd-118 fte 60

(c) File:

It is collection of data stored in the secondary memory. It is used to storing informations that can be processed by program, file mode is categorized into u type of HENRY PAY ENTRY WITH THOSE modes.

(15)

* create mode!

Opens the specified tile and positions it to the beginning. To crecite a new file, open the tile in create mode wer can't read, position a file opened with create mode

* Read mode:

This made opens a file for the reading of data. Read made opens a file to the beginning.

twent to

* Update mode:

This mode allows both reading & writing of data. Uptade mode file opens a file to the beginning.

* Apperd mode:

This allows writing data to the and of

```
a file. Wer can't read, position or revand
a file opened w with append
(15) # include & statio h)
    # includecstdib. h>
  int main()
     FILE *fptri, *fptrz;
     char file rame (100], 4;
     printf ("enter file name to open : (n");
         exant ("1.5", filename);
        fptri = flopen (filename "7");
         "if (fatri== NOU) {
           printf ("coun't open file 1.51", filehame);
           exit(0);
         printf("enter file name to open for
         writing (n");
         scant ("1.5", file name);
          fptr2 = - 10pen (+"(ename, "w");
           of (tptr2 == NULL) {
             printf(" can't open file 1.5 (n', file name);
             oxit (O);
         c = fgetc(fptr(); free not about magnitus of
          while (c) = EOF) [
           foutce (crfptr2);
```

```
printf("In contentes copied to 1.5",
                           filenome);
           fcolose (fotri);
            + close aptr 2);
             return o;
 output:
   enter tilename to open:
            All map of amonally rains") Hisa
   a. txt
  enter filename to open for writing
           iter smorths mayst - mas
   b.txt
   contents copied to bitxt.
(16) 'f scame )':
      This tunction is used to read formatted
Empet form a file. It works similarly to
the scanfe, function, but it takes an additional
the pointer as the fixe argument.
           ("cur a depen (filename," in");
  FILE "fp;
  int in a more and man the " ) to the
  char str[100];
  float f;
 fp = fopen ("data.txt." );
 tecant (fp" ydy. s y. 4", a", str, af);
 print(" lead = 1.d 1.5% +", 9,57,4);
 : (91) oranz
```

cofgetc(fptvi);

fprintf(): This function is used to write formatted output to a tile. It works similarly to the print() function, but it takes an additional the pointers as the first orgument. FILE "4P; int 1: 42; char str[] > Hello world; float f = 3.14; tp = topan ("data txt","w"); to fort ("fp,").dy der, +", ", str, +); tclase (tp) 'Agets()': This function & used to read a line of text from a file. It takes a file pointer, a buffer to store the read, text and the max number of characters to read as arguments: turnet: topon Clonger town, un'); FILE "fp; chair line [100]; tp = dopen (dota.txt", ""); | ton bloom" 19 min fgets (line, size of (line)), fp); print (" Road : Y.s", line); Aclose (fp); funte()' This function is used to write binary

data to a five. It triter a pointer to the data,

al

```
the size of each element, the number of
 elements and a file pointer as argument,
       and a true of the
  FILE "+P; and my ment of that continued (1944)
 ant notal] = {1,2,3,4,5};
  1p = fopen ("dota. bin", "wb");
 - furite (data, size of (int), size of (data) (size of (int),
  tclose (fp);
(4) Hindudecataio.h)
               1/2- 12 F "twasparker" of ") Thomas
   int main!
    fILE * source, *torget;
    source = fopen("source. tat", "r")
    of (source = = NULL) {
    print("would not open source file. 'n");
     return 1; but that bear ait outs of what
   prompte to brow of responsible to
   target : topon (target txt", "w");
    of (target == NULL) {
    printf("could not opent torget tile. (n');
    Aclose (source); ( and from the same and ) admit
     returi ;
     char ch:
     while ((ch = +get ( csource)) = EOE)
     Spread after at posts of walkard and
      fout c (ch, target);
```

```
print " file copied successfully);
        folose (source);
         Aclase (target);
         roturn 0;
        3.
                 The of bear if a continue with the start
1), (18)
     fopen:
       This function is used to open a file. It
    takes the name of the file and the mode
    in which the file should be opened as arguments.
                       (Contains, addition) in
     syntax!
       FILE *topen (const chart fle name, const chartmode);
     Ex: FILE *+p;
          fp > topen ("example.txt"," ");
     Pclose:
         This function is used to close an open title.
     It takes a file pointer as an argument
     syntam:
     int tologe (FILE *(p):
        Gx:
         fclose(fp);
     fget c:
         This function is used to read a single
      character from a tile. It takes tile pointer
      as argument and return the character read as
```

ant.

syntax: "int fact (FILE*+p);

En: ent th; th = fgetc(fp);

fput c: This function is used to write a single character to a file. It tokens an int and a file pointer as arguments:

"int foutclinte, FILE* (p);

fputcch', fp);

fread!
This function is used to read binary data
from a file. It takes a pointer to the
butter.

size_t fread(void *ptr, size_t size, size_t count,

ent data (1007):

tread (data, size of (int), 100, fp);

function is used to write binary atta to a file It takes a painter to the

```
data of a file.
 grent fusite ( consta vol a + ptr , size + size , size + count,
 ent data(100) = {1,2,3,4,5}
  twite (data, size of (int), 100, tp);
torintf:
         function is used to
    This
attput to a file
              (" island to on all mittes") Harries
 syntax:
   ent fprintf (FILE "+p, const char "format,...);
60
  int i = u2; frames of to prove the Address
  float f = 3.14;
  char str[] = "Helloworld";
  tp: topen ("example. txt", "io");
  spintt ( p," Integers: 1.d, floot: 4.1, string: 7.5; ist,
                on monaday to may " str);
   + close (fp);
                room of a . Champer to . again
(1) Hincluder statio. h>
  4 includer string. h>
                      potrojos promiti artilida
  # define HAX-BOOKS 10
```

```
struct book &
 int access-no;
 char author (so);
 that title (1007;
 int year;
 float price;
           takou (1907) 10 och uson) och
3;
 int main() {
struct book library CHAX- 800KS);
int i, n;
printf("enter the no. of books:");
 scort ('Ad', 4n); tons tons (gliff) Hollat th
 for (1:0; 1cn; 1++) {
 prints ("enter details y.d : (n", "+1);
  print (" Access number: ");
  sconf ("1.d", elibrary ("), author);
  printfly Authors: 4);
   scart (4.15", Grany ( 7. author);
   smitt (" tille :"); wi "tet . algrances" anopt = gt
  scanf ("1.5", Chary (") title);
   prints (" Year of publication: " );
   scanf (" d", & about 1" ). year);
   photo (" ph ce: ");
   scand ("1.1", alimany ("), price);
                                President Mars. Sel
   printf(in library catalogue: \n");
```

to (==0; ien:i+1) {

print ("Accose number: 1.d.n", Borony (1) access no);

print (a Acithors: 1.s.ln", Cibrary (i), author);

print ("Title: 1.s.ln", Cibrary (i), title);

print ("Year of Publication: 1.d.n", Cibrary (i), year);

print ("Price: 1.st ln", Cibrary (i), price);

1 return 0;