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08) 'C' program to check whether the number is palindrome (or) not.

```
# include <Stdio.h>

int main( )
{
  int n;
  prinf ("Enter the number: ");
  Scanf ("%d", &n);

  int rev = 0 ; temp = n;

  While (temp)
  {
     rev = rev * 10 + temp % 10 ;
     temp / = 10 ;
  }
  if (n == rev) prinf ("The number is a palindrom");
  else printf ("The number is not a palindrom");

  return 0;

}
```

Input : 1221

Output : It is a palindrom number.

03) $(68)_{10} + (AFC)_{16} + (34)_6 = (?)_2$

$(68)_{10} + (C \times 16^0 + F \times 16^1 + A \times 16^2)_{10} + (4 \times 6^0 + 3 \times 6^1)_{10}$

$(68)_{10} + (12 + 240 + 2560)_{10} + (22)_{10} = (?)_2$

$(68)_{10} + (2812)_{10} + (22)_{10} = (?)_2$

$(2902)_{10} = (?)_2$

$(2902)_{10} = (1011\ 0101\ 0110)_2$

2	2902	
2	1451	0
2	725	1
2	362	1
2	181	0
2	90	1
2	45	0
2	22	1
2	11	0
2	5	1
2	2	1
2	1	0
2	0	1

---

9) Binary Search :- Binary Search is a Search algorithm that finds the position of a target Value with a sorted array. It compares the target Value to the middle element of the array

→ C program to Search a number using binary Search

```
# include <Stdio.h>

int main()
{
  int arr[] = {1,2,3,4,5,6,7,8};
  int n = Sizeof(arr)/Sizeof(arr[0]);

  int k = 10;
  int l = 0, h = n-1, ans = -1;
  while (l<=h)
  {
    int mid = (l+h)/2

  if (arr[mid]>k)h = mid-1;
  else if (arr[mid]<k)l = mid+1;
```

```
else
{
ans = mid;
break;
}
}
if (ans == -1) printf("The number is not in the array");
else printf("The number is found at index %d", ans);
return 0;
}
```

10) Bubble Sort :- It is a sorting algorithm where we repeatedly iterate through the array and swap adjacent elements that are unordered. We repeat this until the array is sorted.... As can be seen after on "pass" over the array, the largest element will reach its correct position.

→ C program to sort given number using bubble sort

```
#include <stdio.h>
int main()
{
  int n;
  printf("Enter the length of array: ");
  Scanf("%d", &n);

  int arr[n];
  printf("Enter the elements:");
  for (int i=0; i<n; i++) Scanf("%d", &arr[i]);

  for (int i=0; i<n; i++)
  {
    for (int j=0; j<n-i-1; j++)
    {
      if (arr[j] > arr[j+1])
      {
        arr[j] = arr[j] ^ arr[j+1];
```

```
            arr[j+1] = arr[j] ^ arr[j+1];
            arr[j] = arr[j] ^ arr[j+1];
        }
    }
}
printf("The Sorted array is: ");
for(int i=0; i<n; i++) printf("%d", arr[i]);

return 0;
}
```

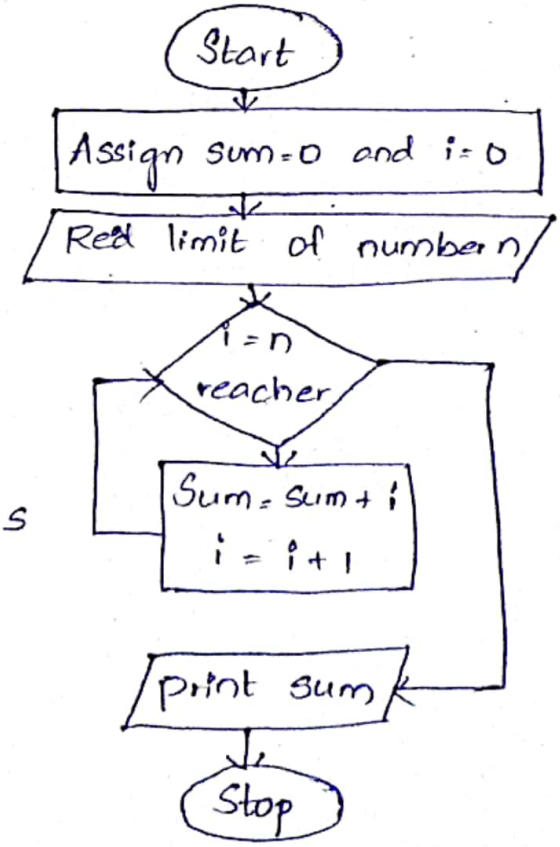
02) Algorithm :- Algorithm is a step-by-step procedure which defines a set of instructions to be executed in a certain order to get the desired out. Algorithms are generally created independent of underlying languages i.e; an algorithm can be implemented in more than one programming language.

* Flowchart :- A flowchart is a diagram that represents an algorithm work flow or process

Algorithm to find sum of n numbers

1) Start
2) Read the Value of n
3) i = 0 ; S = 0
4) if (i > n) go to 8
5) S = S + i
6) i = i + 1
7) go to 3
8) Display the Value of S
9) Stop

Flow chart



1) Compiler :- A Compiler is a computer program which helps you transform source code written in a high level language into low-level machine language.

→ It translates the code written in one programming language to some other language without changing meaning of the code.

→ The compiler also makes the end code efficient which is optimised for execution time and memory space.

→ The compiling process includes basic translation mechanisms & Error detections.

High-level language → Compiler → Low level language

↑ Compilation error.

→ Converts whole code at a time.

→ only one time compilation is required.

→ High-level language is written by developers & machine language can be understood by processor

→ Compiler is used to show errors to the programmer.

→ The main purpose of compiler is to change the code written in one language without changing meaning

→ Compiler can only show syntax error, it can't show logical error.

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16) C program to store ~~(10 elements in an array)~~ and print Roll no, Stu name, branch of 70 Students

```
# include <stdio.h>

typedef Struct
{
  char branch[30], name[30];
  int roll;
} Sturdent;

int main( )
{
  Sturdent arr[70];
```

```
printf ("Enter the details of Students : \n");
for (int i=0; i<70; i++)
{
 printf ("Enter the roll: ");
 Scanf ("%d", &arr[i].roll);
 Printf("Enter the Name: ");
 Scanf(" %[^\n]*c", &arr[i].name);
 Printf ("Enter the Branch: ");
 Scanf("%[^\n]*c", &arr[i].branch);
}
for (int i=0; i<70; i++)
{
 Printf ("The Student %s in branch %s has roll
%d\n", arr[i].name, arr[i].branch, arr[i].roll);
}
 return 0;
}.
```

* Structure : It is a composite data type declaration that defines a physically grouped list of Variables under one name in a block of memory, allowing the different variables to be accessed via a single pointer or by the struct declared name which returns the same address.

---

04) loops in c program language :- A loop is a sequence of instructions that is repeated until a certain condition is reached.

→ The different types of loops in c language are

1) While loop :- Repeats a statement or group of statements while a given condition is true. It tests the condition before executing the loop body.

2) For loop : Executes a sequence of statements multiple times and abbreviates the code that manage the loop variable.

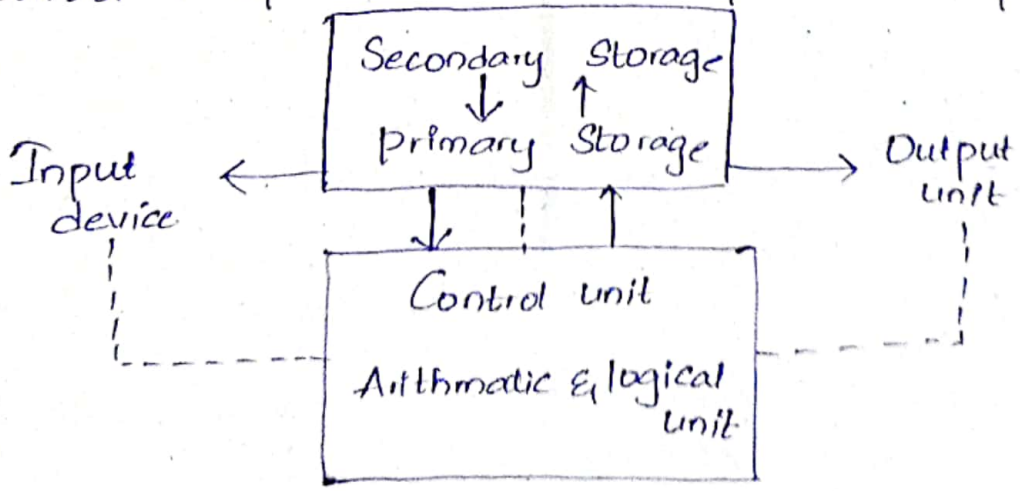
3) Do while loop : It is more like a while statement except that it tests the condition at the end of the loop body.

4) Nested loop : You can use on or more loops inside any other while, for, (or) do while loop.

05) The differences between primary and Secondary memory are.

Primary memory	Secondary memory.
Primary memory allocatled internal memory	Secondary memory as also Called auxiliary memory.
Primary memory is accessed by data bus	Secondary memory is accessed by I/O channels
Direcly accessed by processing unit	Not directly accessed.
primary storage devices are costlied	Secondary storage devices are cheaper than primary
Volatlle	Non Volatile
Ex :- RAM, ROM, etc	Ex :- Hard disks, etc.

06) Operating System :- It is the Software used to Control or operate the hardware parts in computer



The main functions of operating systems are

1) Mange the computer's resources such as the central processing unit, memory, disk drivers, etc

2) Establish user interface

3) execute and provide services for applications software.

4) Memory management

5) Processor management

6) Device management

7) Time Sharing.

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11)

```
#include <stdio.h>
#include <math.h>
float root (int a, int b, int c);
int main( )
{
  int a,b,c;
  printf("Enter the a,b,c of the quadractic equation\n");
  Scanf ("%d%d%d", &a,&b, &c),
  root(a,b,c);
  return 0;
}
float root (int a, int b, int c)
{
 float Square, roots[2];
 Square = b * b - 4 * a * c;
 if (Square == 0)
 {
 roots[0] = -b/(2*a);
 printf("\n%f", roots[0]);
 }
   else if (Square > 0)
```

```
{
roots [0] = (-b + sqrt(Square)) / (2*a);
roots [1] = (-b - sqrt(Square)) / (2*a);
printf ("%f \n %f", roots[0], roots[1]);
}
}
```

13)

```
#include <stdio.h>
# include "Countvowel.h"

int main( )
{
char Sent[30];
Printf("Enter the sentence : ");
Scanf("%[^\n]*c", &Sent);

printf("The number of Vowels is %d", countvowel(Sent));
}

int Countvowel (char s[30])
{
// int n = sizeof(s) /sizeof(s[0]);
int count = 0;
for (int i=0; s[i] != '\0'; i++)
{
char c = s[i];
if (c=='a' || c=='e' || c=='i' || c=='o' || c=='u' ||
c=='A' || c=='E' || c=='I' || c=='O' || c=='U')
{
count++;
}
}
return count;
}
```

14) Break Statement :- When a break Statement is executed, the most deeply nested loop currently being executed is ended and the execution picks up with the next Statement after the loop. For the considering the program:

```
While (1) {
   If (n<0) break;
   foo(n);
   n= n-1;
}
```

The While (1) loop is a "forever" loop, because 1 is the true Value, so the test always Succeeds. within the loop, if the Value of n is less than 0, the loop terminates, otherwise it executes foo(n) and then decrements n.

* Continue Statement : The continue Statement is used inside loops. When a continue Statement is encountered inside a loop, control jumps to the beginning of the loop for next iteration, skipping the execution of Statements inside the body of loop for the current iteration.

Ex :-
```
#include <stdio.h>
int main()
{
  int counter = 10;
  while (counter >=0)
  {
    if (Counter ==7)
    {
      Counter--;
      Continue;
    }
```

```
        printf("%d ", counter);
        counter--;
    }
    return 0;
}
```

Output: 10 9 8 6 5 4 3 2 1 0

(The print statement is skipped when counter value was 7).

---

15) Recursion : The process in which a function calls itself directly or indirectly is called recursion and the corresponding function is called recursion function

```
#include <stdio.h>
int factorial (int n);
int main()
{
    int n;
    printf ("Enter a number : ");
    scanf ("%d", &n);
    printf ("factorial of %d is %d", n, factorial(n));
    return 0;
}
int factorial (int n)
{
    if (n==0) return 1;
    else
    {
    return n * factorial (n-1);
```
