



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad - 500 043

LABORATORY WORK SHEET

Date: 07/06/2022

Roll No: 21951A6754 Name: P. JYOTHI PRASANNA

Exp No: 01 Experiment Name: OPERATORS & EVALUATION OF EXPRESSIONS

DAY TO DAY EVALUATION:

	Preparation	Algorithm	Source Code	Program Execution	Viva	Total
		Performance in the Lab	Calculations and Graphs	Results and Error Analysis		
Max. Marks	4	4	4	4	4	20
Obtained	4	4	4	4	3	19

Signature of Lab I/C

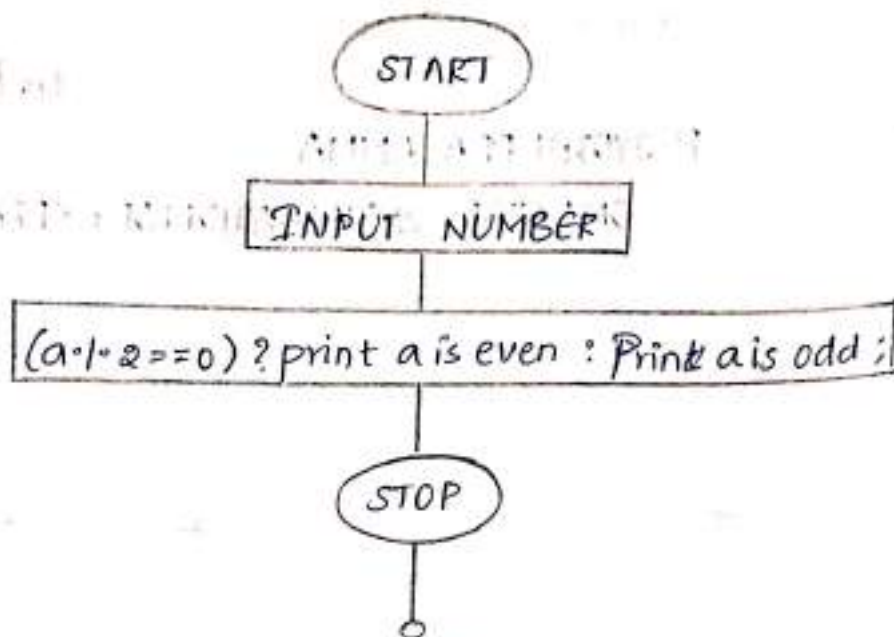
START WRITING FROM HERE:

AIM: Design and develop a flow chart & algorithm to read a number and implement using a C program to check whether the given number is even or odd using ternary operator.

ALGORITHM:

- 1) Take a number from the user
- 2) Check if the number is a natural number.
- 3) If it is a natural number.
- 4) Check if the remainder when the no. is divided by 2, is 0 or not.
- 5) If the remainder is 0, then it is even no., else odd number.

FLOWCHART :



PROGRAM :

```
#include <stdio.h>
void main()
{
    int a;
    printf("Enter an integer:");
    scanf("%d", &a);
    (a % 2 == 0) ? printf("%d is even, a): printf("%d is odd a);
}
```

INPUT :

Enter an integer : 6

OUTPUT :

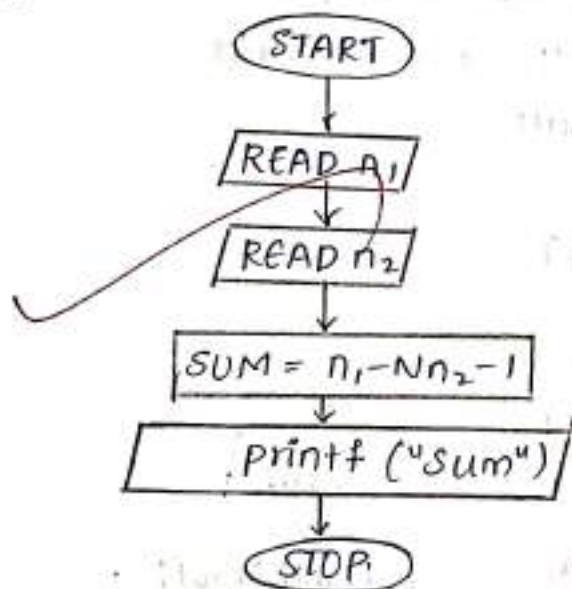
Even

- 2) Design and develop a flowchart & algorithm to read two integers and implement using a C program to perform the addition of two no's without using + operator.

ALGORITHM:

1. Start
2. Read
3. $\text{Sum} = n_1 - n_2 - 1$
4. Display n value
5. Stop

FLOWCHARTS:



PROGRAM:

```
#include <stdio.h>
int main()
{
    int n1, n2, sum;
    scanf("%d %d", &n1, &n2);
    sum = n1 - n2 - 1;
    printf("%d", sum);
}
```

OUTPUT: Sum = 9

INPUT: $n_1 = 4$
 $n_2 = 5$

3. Develop a C program to evaluate the following arithmetic expressions by reading appropriate input from the standard input device. Understand the priority of operators while evaluating expression.

i) $6 * 2 / (2 + 1 * 2 / 3 + 6) + 8 * (8 / 4)$

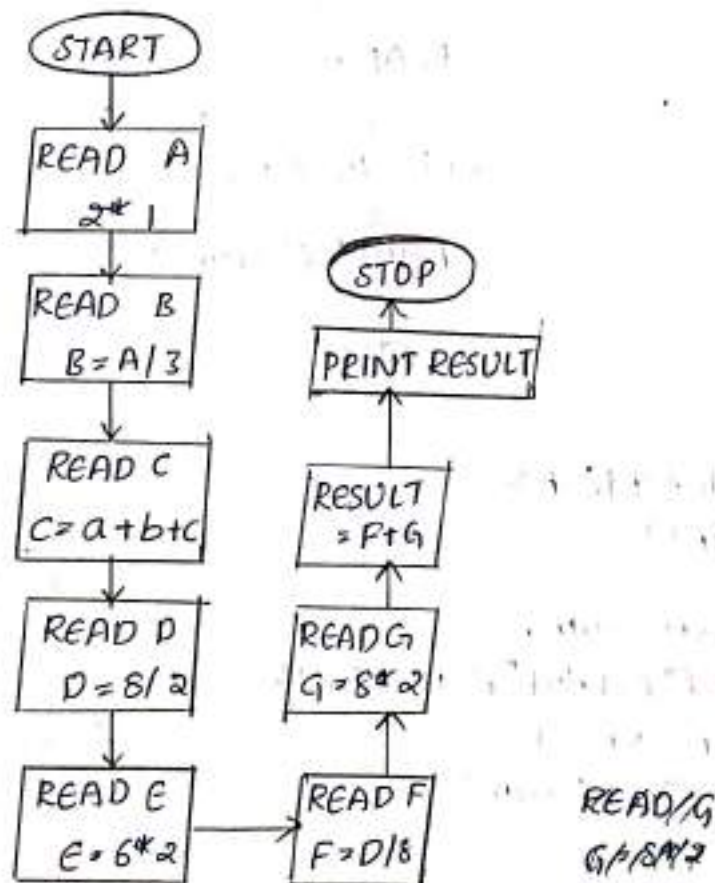
ii) $17 - 8 / 4 * 2 + 3 - 1 + 2$

iii) $!(x > 10) \text{ \& \& } (y == 2)$

(*) ALGORITHM:

- | | |
|---------------------|------------------------------|
| 1) Start | 6) $E = 6 * 2$ |
| 2) $A = 2 * 1$ | 7) $F = 12 / 8$ |
| 3) $B = A / 3$ | 8) $G = 8 * 2$ |
| 4) $C = 2 + B + 6$ | 9) Calculate $F + G$ |
| 5) $D = 8 / 6$ | 10) Store $F + G$ in result. |
| 11) Display result. | |

FLOWCHART:





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START WRITING FROM HERE:

PROGRAM:

```
#include <stdio.h>
int main()
{
    int a, b, c, d, e, f, g, result;
    a = 2 * 1;
    b = a / 3;
    c = a + b + 6;
    d = 8 / 6;
    e = 6 * 2;
    f = 12 / 8;
    g = 8 * 2;
    Result = f + g;
    printf ("f + d", result);
    return 0;
}
```

OUTPUT : 17

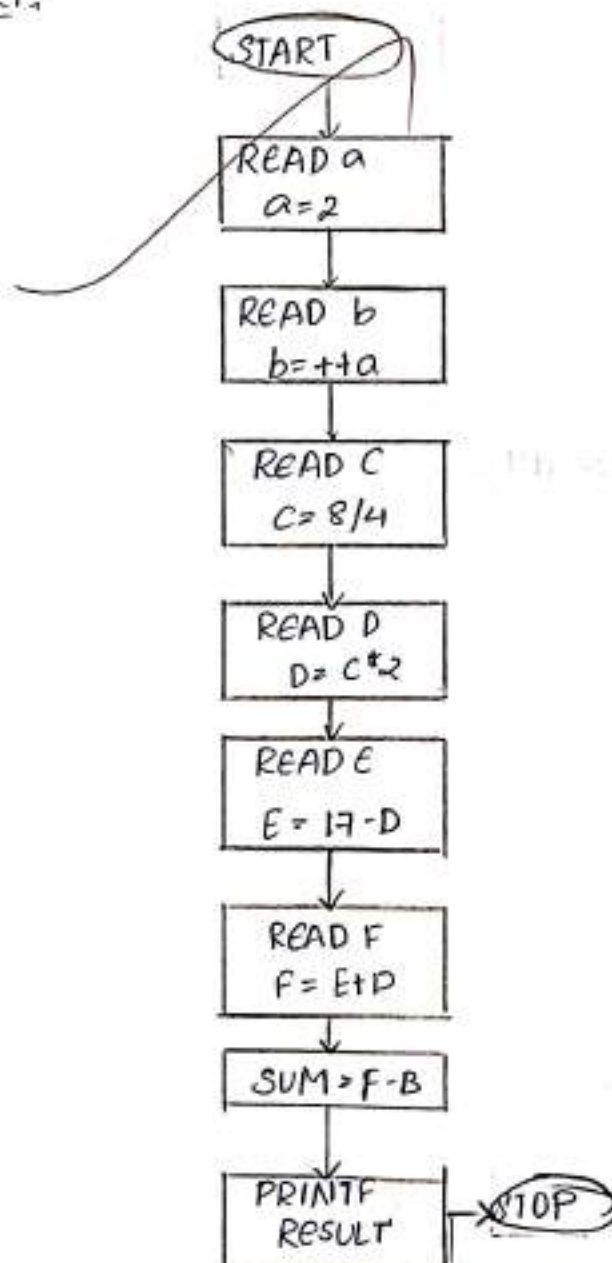
(ii) To evaluate the arithmetic expression

$$17 - 8/4 * 2 + 3 - ++12$$

ALGORITHM:

- | | |
|---------------------------|----------------------------|
| 1) Start | 7) $D = 17 - C$ |
| 2) Initialize $A = 2$ | 8) $E = D + C$ |
| 3) Initialize the sum = 0 | 9) Calculate $sum = E - x$ |
| 4) Calculate $x = ++A$ | 10) Print sum |
| 5) $B = 8/4$ | 11) Stop |
| 6) $C = B * 2$ | |

FLOW CHART:



PROGRAM:

```
#include <stdio.h>
int main()
{
    int a, b, c, d, e, f, result;
    a = 2;
    b = ++a;
    c = 8/4;
    d = c * 2;
    e = 17 - d;
    f = e - d;
    result = f - b;
    printf("%d", result);
    return 0;
}
```

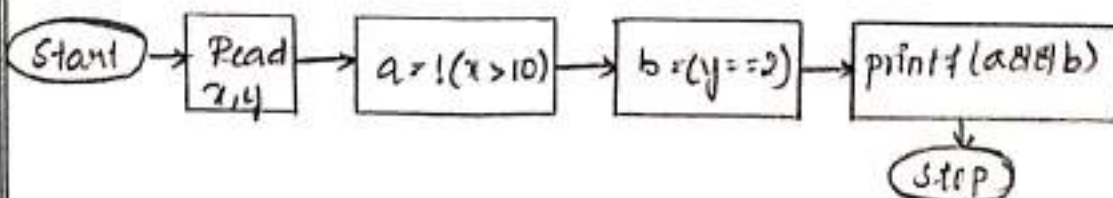
OUTPUT: 14

ii) To evaluate the expression: $!(x > 10) \&\& (y == 2)$

ALGORITHM:

- 1) Start
- 2) Read number x & y
- 3) $a = !(x > 10)$
- 4) $b = y == 2$
- 5) Perform $a \&\& b$
- 6) Store value of $a \&\& b$ in result
- 7) Display result
- 8) Stop

FLOWCHART:



PROGRAM:

```
#include <stdio.h>
main()
{
    int x, y, a, b, result;
    scanf ("%d %d", &x, &y);
    a = ! (x > 10);
    b = y == 2;
    result = (a && b);
    printf ("%d", result);
}
```

INPUT: 4
 2

OUTPUT: 1

- 4) Develop a C program to display the size of various built-in data types in C language.

ALGORITHM:

1. Start
2. Display size of char using size of (char)
3. Display size of int using size of (int)
4. Display size of float using size of (float)
5. Display size of double using size of (double)
6. Stop



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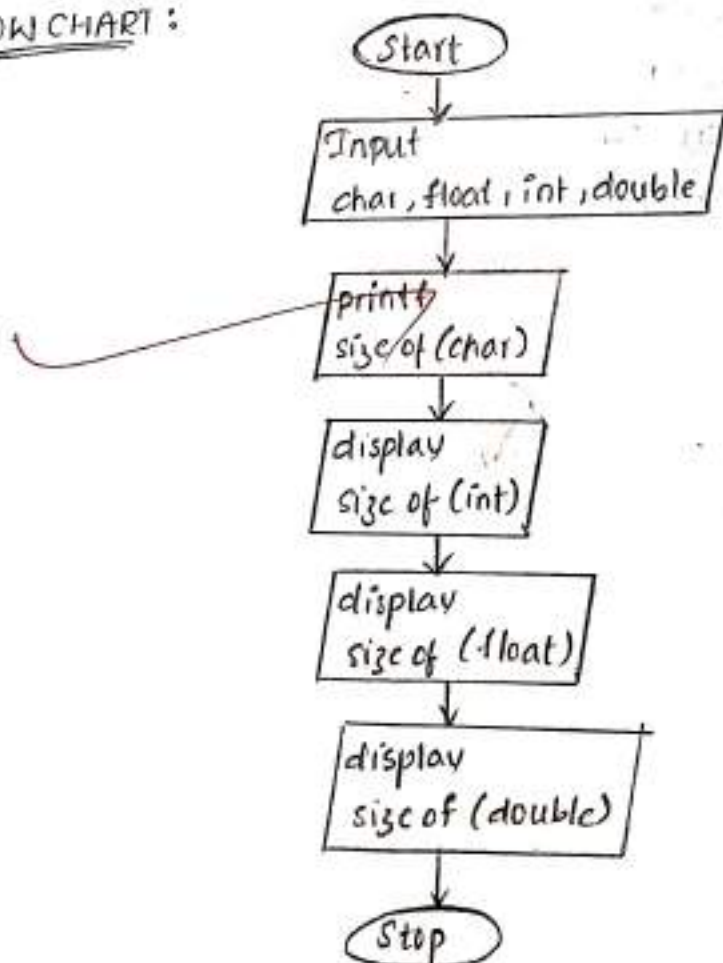
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START WRITING FROM HERE:

FLOW CHART :



PROGRAM :

```
#include <stdio.h>
int main()
{
    int a;
    char b;
    float c;
    double d;
    printf("int size : %d\n", sizeof(a));
    printf("char size : %d\n", sizeof(b));
    printf("float size : %d\n", sizeof(c));
    printf("double size : %d\n", sizeof(d));
    return 0;
}
```

OUTPUT :

int size :	4
char size :	1
float size :	4
double size :	8

