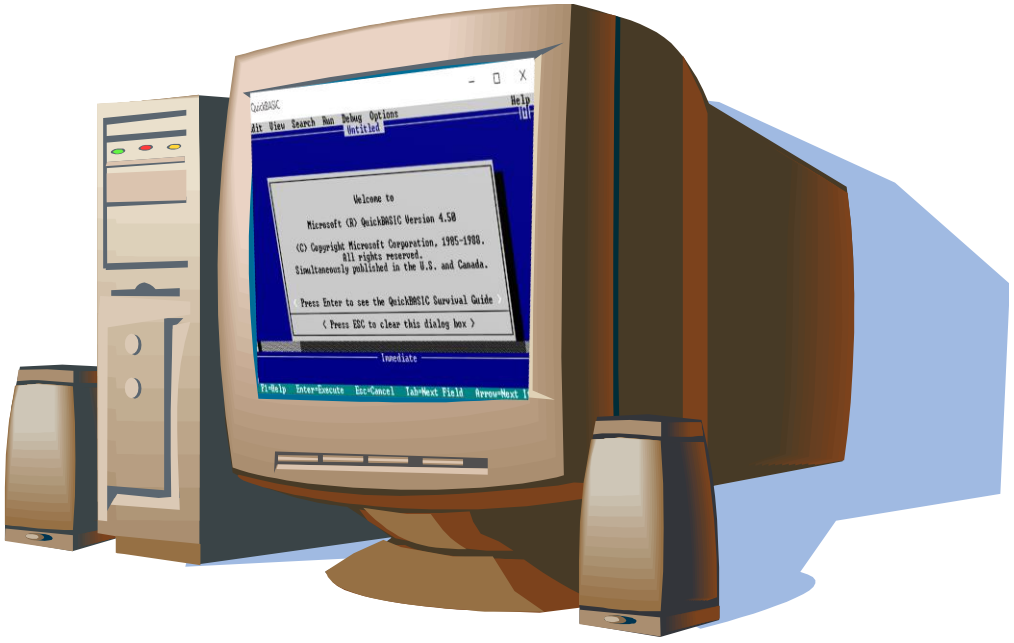
COMPUTER PROGRAMMING IN QBASIC



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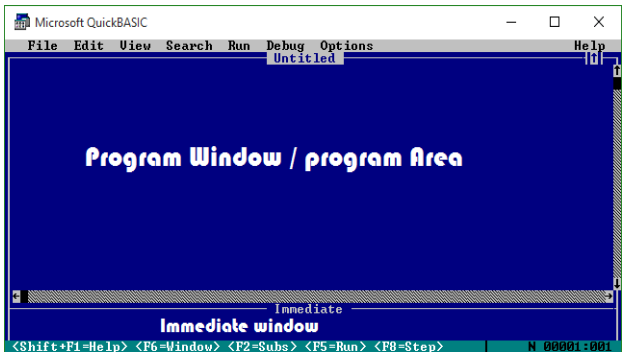
Q.N.1. What is QBASIC ?

- QBASIC stands for *Quick Beginners All-Purpose Symbolic Instruction Code*. QBASIC is one of the most popular *high level programming* language developed by Microsoft Corporation, USA in 1985 A.D. QBASIC is *Interpreter* based programming language. The default extension of QBASIC program file is ".BAS".

Q.N. 2. Write any features of QBASIC ?

- Some features of QBASIC are given below:
  1. QBASIC is easy to debug.
  2. QBASIC checks syntax automatically.
  3. QBASIC is interpreter based language.
  4. QBASIC supports various inbuilt functions.
  5. QBASIC in not case sensitive so, can be used any case of letters.

Q.N. 3. Types of QBASIC windows



There are two types of QBASIC window they are:

1. Program window:- It is the largest blank area of the screen, where we can type and execute QBASIC program. It is also called program area. In this window, we can execute the program using F5 Key.
2. Immediate window:- It is the smallest area located just below the program window. The commands of statement written in this area can be executed immediately by pressing Enter key. It is also called immediate mode.

Q.N. 4. Write Rules for giving a file name?

- 1.The file name should begin with an alphabet.
  2. Any special characters are not allowed in the file name.
  3.The file name can be given upto 8 characters.
  4.The blank space in not allowed in the file name.

Q.N.5. Element of QBASIC programming language.

- The programming element of QBASIC are:
  i. Character Set ii. Keywords
  iii. Variables iv. Constant
  v. Operators vi. Statement
  vii. Expression etc.

I. Character Set

- A set of characters that are allowed to use in QBASIC is known as the QBASIC character set. The QBASIC character set consists of alphabets (small & capital), numbers (0 to 9) & special characters
  (+ - * / , ; : < > $! & ^ \ ? %)

II. Keywords

- Keywords are also called reserve words because the can not be used as variable name or other user defined program elements. Each programming language has some predefined words or commands which perform specific task in the program are called keywords. Some example of keywords are: CLS, PRINT, INPUT, REM, KILL, IF, ELSE, THEN, FOR, WHILE, DO, READ, DATA, GOTO, END etc.

III. Variables

- A variable is a name of storage location in the computer's memory, in which can store different values temporarily.
  Two types of variables they are :
  i. Numeric Variable:- The variable which is used to store only numeric data is called numeric variable. E.g. A = 420.
  ii. String Variable:- The variable which is used to store only string data is called string variable. E.g. Name$="NP RIJAL" .

- **Rules for giving variable name:**
  1.The variable name must begin with alphabet.
  2.The variable name may be upto 40 characters long.
  3.The blank space is not allowed is between the variable name.
  4.The keywords can not be used as a variable name.
  5.Variables in QBASIC are not case sensitive.
  6.The find character may either be some type of declaration characters $, #, ! , %, & or nothing.

IV. Constant

- Constant is the fixed values or notations which remain unchanged. They are the value or entity used in a program. Constant are the fixed notations which remain unchanged during program execution.

  Two types of constants they are :

  i. Numeric constant :- Numeric constant are the positive or negative number. The comma is not allowed in numeric constant. E.g. 420, -225, 24.125 and -23.53 etc.

  ii. String constant :- A string constant is a set of alphanumeric characters. They are enclosed with in double quotation marks. E.g. "Hello" , "nprijal124" , "12345" etc.

V. Operators

- Operators are the special symbols or words that are used to perform various operation on constant or variable. An operator is a sign of symbol used to perform an operation between two operands and give result.
- Basically four types of operators are used in QBASIC. They are:

  1. Arithmetic operator 2. Relational operator
  3. Logical operators 4. String operators

1. Arithmetic operators

- The operators which are used to perform different mathematical calculation addition, subtraction, multiplication and division are known as arithmetic pertaors.

Operator	Meaning	Example
^	Exponentiation	4^2 = 16
/	Division	25 / 4 = 6.25
*	Multiplication	5 * 15 = 75
\	Integer Division	25 \ 4 = 6
MOD	Modulus Division	24 MOD 5 = 4
+	Addition	5 + 3 = 8
-	Subtraction	64 – 4 = 60

2. Logical operator

- The operator, which h are used to combine two or more relational expression are called logical operators. They evaluate values which will be either true or false.

Operator	Example
AND	X = 13 AND Y = 12
OR	X = 15 OR Y = 10
NOT	X = 18 NOT Y = 33

3. Relational (comparison) operator

- The operators that are used to compare two values are called relational operators.

Operator	Meaning	Example
<	Less Than	3 < 4
>	Greater Than	5 > 3
<=	Less Than or equal to	5 <= 5
>=	Greater Than or equal to	8 >= 8
=	Equal to	6 = 6
< >	Not equal to	43 < > 3

4. String operator

- String operator joins two or more string data. The act of combining two string in called concatenation. The plus sing (+) is used as the string operator.

  Example:- A$ = "NETRA-" & B$ = "RIJAL"

  A$ + B$ => NETRA-RIJAL

VI. Expression

- An expression is a valid combination of constants, variables and operators.

  Example:- PRINT (3^2+3*4 – 3) / 4

VII. Statement

- The instructions written using these keywords or commands are called statements. The command or set of instruction used to code the program for specific task is known as statement.

QBASIC GENERAL STATEMENT

A. REM Statement

- The REM statement is used to put comment in the program. The REM is a declaration statement which is used to put comment or remarks in the program. It is not executable statement.

  Syntax:-

  REM <comment>

Example of REM Statement

```
CLS
REM * Calculate the area of circle*
  INPUT "Enter radius of circle"; R
   LET Pi = 22 / 7
    Area = Pi * R * R
    PRINT "Area of circle:"; Area
  END
```

B. CLS Statement

- This statement is used to clear the output screen. Generally the CLS statement is used at the starting of the program.

Syntax:- CLS

Example of CLS Statement

```
PRINT "Hello World!"
CLS
  PRINT "I Am Computer Teacher"
END
```

C. PRINT Statement

- The PRINT statement is used to display the output on the screen. We can also use question marks (?) instead of PRINT Statement.

Syntax:-

PRINT <constants/variables/expressions>
OR,
? < constants/ variables/ expressions>

Example of PRINT statement

```
CLS
  PRINT "Hello Everybody"
  PRINT "My Contact Number Is"
  PRINT "9847431162"
END
```

D. LET Statement

- The LET statement is an assignment statement which is used to assign value to a variable LET is an optional statement.

Syntax:-

LET<variable>=<constants/variables/expression>

First Example of LET Statement

```
CLS
  LET Name$ = "NP RIJAL"
  LET Age = 23
  PRINT Name$ , Age
END
```

Second Example of LET Statement

```
CLS
  LET Name$="NPR" : LET Add$= "RUKUM"
  LET Wardno = 06
  PRINT Name$ , Add$ , Wardno
END
```

E. INPUT Statement

- The INPUT statement is used to accept data from the keyboard at the execution (Run) time of the program.

Syntax:- INPUT <"Message"> ; or, <variables>

Example of INPUT statement

```
CLS
  REM * To Calculate Kinetic Energy *
  INPUT "Enter mass:"; M
  INPUT "Enter velocity:"; V
  KE = (1/2) * M * V^2
  PRINT "Kinetic Energy:"; KE
END
```

F. READ .... DATA Statement

- This statement is used to read the given value of data statement and store than with suitable variable.

Syntax:-

READ <variable1>,<variable2>,.....
DATA <value1> , <value2> , ...

Example of REAT ... DATA Statement

```
CLS
  READ N$ , Age , Mobile
  PRINT "NAME:";N$
  PRINT "AGE:";Age
  PRINT "MOBILE:";Mobile
  DATA NPRIJAL , 23 , 9847431162
END
```

G. END Statement

- The END statement is used to terminate the execution of the program. It stops the further processing of the program.

Syntax:-

END

Example of END Statement

```
REM * To Calculate Area of Triangle *
CLS
  INPUT "Enter first side:"; a
  INPUT "Enter second side:"; b
  INPUT "Enter third side:"; c
  s = ( a + b + c ) / 2
  Area = (s * (s - a) * (s - b) * (s - c)) ^ 0.5
  PRINT "Area of Triangle:"; Area
END
```

1. Write a program to generate the given Series.

A. 1, 2, 3, 4, 5, ... Up to 100.

Solution:-

```
CLS
  FOR i = 1 TO 100  STEP 1
     PRINT i; ",";
  NEXT i
END
```

B. 0, 2, 4, 6, 8, ...Up to 100.

Solution:-

```
CLS
  FOR i = 0 TO 100  STEP 2
     PRINT i; ",";
  NEXT i
END
```

C. 1, 3, 5, 7, 9, ...Up to 100.

Solution:-

```
CLS
  FOR i = 1 TO 100  STEP 2
     PRINT i; ",";
  NEXT i
END
```

D. 2, 8, 18, 32, ...Up to 10th Terms.

Solution:-

```
CLS
  LET N = 2
  FOR i = 1 TO 10  STEP 1
     R = N * i^2
     PRINT R; ",";
  NEXT i
END
```

E. 1, 4, 9, 16, ...Up to 10th Terms.

Solution:-

```
CLS
  FOR i = 1 TO 10  STEP 1
     R = i^2
     PRINT R; ",";
  NEXT i
END
```

F. 1, 8, 27, 64,.....Up to 10th Terms.

Solution:-

```
CLS
  FOR i = 1 TO 10  STEP 1
     R =  i^3
     PRINT R; ",";
  NEXT i
END
```

G. 5, 25, 125,.....Up to 10th Terms.

Solution:-

```
CLS
  LET N = 5
  FOR i = 1 TO 10  STEP 1
     PRINT N ^ i; ",";
  NEXT i
END
```

H. 5, 55, 555, ...Up to 7th Terms.

Solution:-

```
CLS
  LET N = 5
  LET R = 0
  FOR i = 1 TO 7  STEP 1
     R = R * 10 + N
     PRINT R; ",";
  NEXT i
END
```

I. 3333333, 333333, 33333, ... 3.

Solution:-

```
CLS
  LET N = 3333333
  FOR i = 1 TO 7  STEP 1
     PRINT N; ",";
     N = N \ 10
  NEXT i
END
```

J. 1, 1, 2, 3, 5, 8,.....Up to 10th Terms.

Solution:-

```
CLS
  LET A = 0 : B = 1 :  C = 1
  FOR i = 1 TO 10  STEP 1
     PRINT C; ",";
     C = C + A
     A = B
     B = C
  NEXT i
END
```

K. 0.1, 0.11, 0.111, ...Up to 10th Terms.

Solution:-

```
CLS
  LET N = 0.1
  FOR i = 1 TO 10 STEP 1
     PRINT N; ",";
     N = N / 10 + 0.10
  NEXT i
END
```

L. 0.11111, 0.1111, 0.111 ……. , 0.1

Solution:-

```
CLS
  LET N = 0.11111
  FOR i = 1 TO 5 STEP 1
     PRINT N; ",";
     N = N * 10 - 1
  NEXT i
END
```

M. 1, 1/2, 1/3, 1/4, ……Up to10th Terms.

Solution:-

```
CLS
  LET A = 1
  PRINT  A;
  FOR i = 2 TO 10 STEP 1
     PRINT  "," ; A ; "/"; i ;
  NEXT i
END
```

N. 0.1, 0.03, 0.005, ……. Up to 7th Terms.

Solution:-

```
CLS
  LET A = 10
  LET O = 1
  FOR i = 1 TO 7 STEP 1
     R = O / A
     PRINT R; ",";
     O = O + 2
     A = A * 10
  NEXT i
END
```

1. Generate Numeric Pattern Using Nested LOOP.

A.
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5

Solution:

```
CLS
FOR a =1 TO 5 STEP 1
      FOR b = 1 TO   a  STEP 1
         PRINT  b;
      NEXT b
      PRINT
NEXT a
END
```

B.
1
22
333
4444
55555

Solution:

```
CLS
  FOR a = 1  TO 5  STEP 1
        FOR  b = 1  TO a STEP 1
           PRINT a;
        NEXT b
        PRINT
  NEXT a
END
```

C.
12345
1234
123
12
1

Solution:

```
CLS
  FOR a = 5  TO 1  STEP -1
        FOR b = 1 TO a STEP 1
           PRINT b;
        NEXT b
        PRINT
  NEXT a
END
```

D.
55555
4444
333
22
1

Solution:

```
CLS
  FOR a = 5  TO 1 STEP -1
        FOR b = 1 TO a STEP 1
           PRINT a;
        NEXT b
        PRINT
  NEXT a
END
```

E. 54321
5432
543
54
5

Solution:

```
CLS
  FOR a = 1  TO 5 STEP 1
        FOR b = 5 TO a STEP -1
           PRINT b;
        NEXT b
        PRINT
  NEXT a
END
```

F. 5
54
543
5432
54321

Solution:

```
CLS
  FOR a = 5  TO 1 STEP -1
        FOR b = 5 TO a STEP -1
           PRINT b;
        NEXT b
        PRINT
  NEXT a
END
```

A. Write a program to input a string and print total number of character in the string.

Solution:-

```
CLS
   INPUT "Enter any string"; ST$
   T = LEN (ST$)
   PRINT "Total number of character:" ; T
END
```

B. Write a program to input the first and last name of person and print the first letter.

Solution:-

```
CLS
   INPUT "Enter your first & last Name:" ; N$
   PRINT "First letter of Name"; LEFT$(N$,1)
END
```

C. Write program to produce output as given below.
MOUSE
OUSE
USE
SE
E

Solution:-

```
CLS
   LET  ST$ = "MOUSE"
   FOR I = LEN(ST$) TO 1 STEP-1
      PRINT RIGHT$(ST$, I)
   NEXT I
END
```

D. A palindrome is word that reads same way backward and forward. Write a program that reads in a word and decides if that is palindrome.

Solution:-

```
CLS
   INPUT "Enter any string:" ;  ST$
   FOR i = LEN(ST$) TO 1 STEP-1
      R$ = R$ + MID$(ST$, i , 1)
   NEXT i
   IF  ST$ = R$ THEN
      PRINT "String is palindrome"
   ELSE
      PRINT "String is not palindrome"
   END IF
END
```

E. Write a program to input a string and print the same in reverse. IF the string is COMPUTER . The output should be RETUPMOC.

Solution:-

```
CLS
   LET  ST$ = "COMPUTER"
   FOR i = LEN(ST$) TO 1 STEP-1
      R$ = R$ + MID$(ST$, i , 1)
   NEXT i
   PRINT "Reverse String: " ; R$
END
```

F. Write a program to input a word and count total number of alphabet "A" in the input word.

Solution:-

```
CLS
   INPUT "Enter any string:" ;  ST$
   ST$ = UCASE$ (ST$)
   LET  C = 0
   FOR i = LEN(ST$) TO 1 STEP-1
      R$ = MID$(ST$, i , 1)
      IF  R$ = "A" THEN
           C = C + 1
      END IF
   NEXT i
   PRINT "Total number of A "; C
END
```

G. Write a program that reads a string and counts the total number of vowels, in the string.

Solution:-

```
CLS
   INPUT "Enter any string:" ;  ST$
   ST$ = UCASE$ (ST$)
   LET  C = 0
   FOR i = LEN(ST$) TO 1 STEP-1
      R$ = MID$(ST$, i , 1)
      IF  R$ = "A"  OR R$ = "E"  OR  R$ = "I"  OR
               R$="O"  OR  R$ = "U" THEN
           C = C + 1
      END IF
   NEXT i
   PRINT "Total number of  VOWELS "; C
END
```

H. Write a program that reads a sentence and count the total number of words in the sentence.

Solution:-

```
CLS
   INPUT "Enter any string:" ;  ST$
   LET  C = 1
   FOR i = LEN(ST$) TO 1 STEP-1
      R$ = MID$(ST$, i , 1)
      IF  R$ = " " THEN
           C = C + 1
      END IF
   NEXT i
   PRINT "Total number of words "; C
END
```

I. Write a program to input any word and find ASCII code of an individual characters.

Solution:-

```
CLS
   INPUT "Enter any string:" ;  ST$
   FOR i = 1  TO  LEN(ST$)  STEP 1
      R$ = MID$(ST$, i , 1)
      PRINT  R$ ; "=" ; ASC(R$)
   NEXT i
END
```

J. Write a program to print square roots of first 10 numbers (1 – 10).

Solution:-

```
CLS
   PRINT "Number", "Square Root"
   FOR i = 1  TO  10  STEP 1
      PRINT  i , SQR( i )
   NEXT i
END
```

K. Write a program to decide weather an input number is positive, negative & zero. Use SGN function.

Solution:-

```
CLS
   INPUT "Enter any Number : " ; N
   R = SGN ( N )
   IF R = 1 THEN
      PRINT  N; " is Positive Number"
   ELSEIF  R = -1 THEN
      PRINT  N; " is Negative Number"
   ELSE
      PRINT  N; "is Zero"
   END IF
END
```

L. Write a program to print all the alphabets in small letter (lower case) using CHR$ function. (Hint: ASCII code of 'a' is 97)

Solution:-

```
CLS
   PRINT "Alphabet in small letter"
   FOR i = 97  TO  122  STEP 1
      PRINT  CHR$( i )
   NEXT i
END
```

M. Write a program to input any number and check whether given number is exactly divisible by 3 and 5 or not.

Solution:-

```
CLS
    INPUT "Enter any Number"; N
    R1 = N MOD 3
    R2 = N MOD 5
    IF R1 = 0 AND R2 = 0 THEN
       PRINT N; " is exactly divisible by 3 & 5"
    ELSE
       PRINT N; " is not exactly divisible by 3 & 5"
    END IF
END
```

N. Write a program to input any three different numbers and find the highest number.

Solution:-

```
CLS
    INPUT "Enter first number"; A
    INPUT "Enter second number"; B
    INPUT "Enter third number"; C
    IF A>B  AND A> C THEN
       PRINT A; "is highest number"
    ELSEIF B>C  AND B>A THEN
       PRINT B; "is highest number"
    ELSE
       PRINT C; "is highest number"
    END IF
END
```

A.
```
REM  * CALCULATE TOTAL UNING VAL *
LET A$ = "55 SCIENCE I"
LET B$ = "65 SCIENCE II"
C = VAL(A$)
D = VAL(B$)
LET T = C + D
PRINT  "SCIENCE TOTAL " ; T
END
```

B.
```
CLS
LET M = 58.25
LET N = 5.031
I = INT(M) + INT (N)
PRINT "Integer Addition" ; M; "And"; N ; "Is:" ; I
END
```

C.
```
REM  *SQUARE ROOT OF A NUMBER*
N =100
S = SQR(N)
PRINT "SQUARE ROOT OF " ; N; "IS" ; S
END
```

D.
```
REM  *Printing The Last Digit Of A Number*
CLS
LET   X = 3456
X$ = STR$ (X)
PRINT RIGHT$ (X$, 1)
END
```

E.
```
CLS
LET  P = 456
LET  L$ = STR$ (P)
PRINT  L$
END
```

F.
```
CLS
LET  D$ = "15TH  May"
LET  T = VAL(D)
PRINT "YESTERDAY WAS" ; T-1 ; "MAY"
END
```

G.
```
CLS
LET  A = 15.7
LET  N = INT (A)
PRINT N
END
```

H.
```
CLS
LET ST$  = "NEPAL"
FOR C = 1 TO LEN (ST$)
     PRINT LEFT$ (ST$ , C)
NEXT C
END
```

I.
```
CLS
FOR C = 0 TO 5
   PRINT "*" ; SPACE$(C); "*"
NEXT C
END
```

OUTPUT:-

```
**
* *
*  *
*   *
*    *
*     *
```

H. CLS
FOR I = 1 TO 5
PRINT ASC ("exam")
NEXT I
END

OUTPUT:-

101 101 101 101 101

A. CLS
FOR A=65 TO 90
PRINT CHR$(A)
NEXT A
END

OUTPUT:-

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

B. CLS
FOR I = 1 TO 5
CH$ = MID$("BASIC", I, 1)
PRINT ASC(CH$)
NEXT I
END

OUTPUT:-

66 65 83 73 67

C. CLS
A$ = DATE$
PRINT "DATE:" ; MID$ (A$, 4, 2)
PRINT "MONTH:" LEFT$ (A$, 2)
PRINT "YEAR:"; RIGHT$ (A$, 2)
END

OUTPUT:-

DATE: 01
MONTH: 03
YEAR: 17

D. CLS
DO
LOCATE 12, 20
PRINT TIME$
LOOP
END

OUTPUT:-

19 : 38 : 45

E. CLS
LET NUM = -64
PRINT ABS(NUM)
PRINT SQR(ABS(NUM))
PRINT SGN(NUM)
PRINT INT (NUM/10)
PRINT CINT(64/17)
END

OUTPUT:-

64 8 -1 -7 4

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I. REM * CALCULATE TOTAL UNING VAL *
LET A$ = "55 SCIENCE I"
LET B$ = "65 SCIENCE II"
C = VAL(A$)
D = VAL(B$)
LET T = C + D
PRINT "SCIENCE TOTAL " ; T
END

J. CLS
LET M = 58.25
LET N = 5.031
I = INT(M) + INT (N)
PRINT "Integer Addition" ; M; "And"; N ; "Is:" ; I
END

K. REM *SQUARE ROOT OF A NUMBER*
N =100
S = SQR(N)
PRINT "SQUARE ROOT OF " ; N; "IS" ; S
END

L. REM *Printing The Last Digit Of A Number*
CLS
LET X = 3456
X$ = STR$ (X)
PRINT RIGHT$ (X$, 1)
END

M. CLS
LET P = 456
LET L$ = STR$ (P)
PRINT L$
END

N. CLS
LET D$ = "15TH May"
LET T = VAL(D)
PRINT "YESTERDAY WAS" ; T-1 ; "MAY"
END

O. CLS
LET A = 15.7
LET N = INT (A)
PRINT N
END

P. CLS
LET ST$ = "NEPAL"
FOR C = 1 TO LEN (ST$)
PRINT LEFT$ (ST$, C)
NEXT C
END

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O. Write a program to input a string and print total number of character in the string.

Solution:-

```
CLS
   INPUT "Enter any string"; ST$
   T = LEN (ST$)
   PRINT "Total number of character:" ; T
END
```

P. Write a program to input the first and last name of person and print the first letter.

Solution:-

```
CLS
   INPUT "Enter your first & last Name:" ; N$
   PRINT "First letter of Name"; LEFT$(N$,1)
END
```

Q. Write program to produce output as given below.

```
MOUSE
OUSE
USE
SE
E
```

Solution:-

```
CLS
   LET ST$ = "MOUSE"
   FOR I = LEN(ST$) TO 1 STEP-1
      PRINT RIGHT$(ST$, I)
   NEXT I
END
```

R. A palindrome is word that reads same way backward and forward. Write a program that reads in a word and decides if that is palindrome.

Solution:-

```
CLS
   INPUT "Enter any string:" ;  ST$
   FOR i = LEN(ST$) TO 1 STEP-1
      R$ = R$ + MID$(ST$, i , 1)
   NEXT i
   IF  ST$ = R$ THEN
      PRINT "String is palindrome"
   ELSE
      PRINT "String is not palindrome"
   END IF
END
```

S. Write a program to input a string and print the same in reverse. IF the string is COMPUTER . The output should be RETUPMOC.

Solution:-

```
CLS
   LET  ST$ = "COMPUTER"
   FOR i = LEN(ST$) TO 1 STEP-1
      R$ = R$ + MID$(ST$, i , 1)
   NEXT i
   PRINT "Reverse String: " ; R$
END
```

T. Write a program to input a word and count total number of alphabet "A" in the input word.

Solution:-

```
CLS
   INPUT "Enter any string:" ;  ST$
   ST$ = UCASE$ (ST$)
   LET  C = 0
   FOR i = LEN(ST$) TO 1 STEP-1
      R$ = MID$(ST$, i , 1)
      IF  R$ = "A" THEN
           C = C + 1
      END IF
   NEXT i
   PRINT "Total number of A "; C
END
```

U. Write a program that reads a string and counts the total number of vowels, in the string.

Solution:-

```
CLS
    INPUT "Enter any string:" ;  ST$
    ST$ = UCASE$ (ST$)
    LET  C = 0
    FOR i = LEN(ST$) TO 1 STEP-1
        R$ = MID$(ST$, i , 1)
        IF  R$ = "A"   OR R$ = "E"  OR  R$ = "I"  OR
                R$="O"  OR  R$ = "U" THEN
            C = C + 1
        END IF
    NEXT i
    PRINT "Total number of  VOWELS "; C
END
```

V. Write a program that reads a sentence and count the total number of words in the sentence.

Solution:-

```
CLS
    INPUT "Enter any string:" ;  ST$
    LET  C = 1
    FOR i = LEN(ST$) TO 1 STEP-1
        R$ = MID$(ST$, i , 1)
        IF  R$ = " " THEN
            C = C + 1
        END IF
    NEXT i
    PRINT "Total number of words "; C
END
```

W. Write a program to input any word and find ASCII code of an individual characters.

Solution:-

```
CLS
    INPUT "Enter any string:" ;  ST$
    FOR i = 1  TO  LEN(ST$)  STEP 1
        R$ = MID$(ST$, i , 1)
        PRINT  R$ ; "=" ; ASC(R$)
    NEXT i
END
```

X. Write a program to print square roots of first 10 numbers (1 – 10).

Solution:-

```
CLS
    PRINT "Number", "Square Root"
    FOR i = 1  TO  LEN(ST$)  STEP 1
        PRINT  i , SQR( i )
    NEXT i
END
```

Y. Write a program to decide weather an input number is positive, negative & zero. Use SGN function.

Solution:-

```
CLS
    INPUT "Enter any Number : " ; N
    R = SGN ( N )
    IF R = 1 THEN
        PRINT  N; " is Positive Number"
    ELSEIF  R = -1 THEN
        PRINT  N; " is Negative Number"
    ELSE
        PRINT  N; "is Zero"
    END IF
END
```

Z. Write a program to print all the alphabets in small letter (lower case) using CHR$ function. (Hint: ASCII code of 'a' is 97)

Solution:-

```
CLS
    PRINT "Alphabet in small letter"
    FOR i = 97  TO  122  STEP 1
        PRINT  CHR$( i )
    NEXT i
END
```

AA. Write a program to input any number and check whether given number is exactly divisible by 3 and 5 or not.

Solution:-

```
CLS
    INPUT "Enter any Number"; N
    R1 = N MOD 3
    R2 = N MOD 5
    IF R1 = 0 AND R2 = 0 THEN
        PRINT N; " is exactly divisible by 3 & 5"
    ELSE
        PRINT N; " is not exactly divisible by 3 & 5"
    END IF
END
```

BB. Write a program to input any three different numbers and find the highest number.

Solution:-

```
CLS
    INPUT "Enter first number"; A
    INPUT "Enter second number"; B
    INPUT "Enter third number"; C
    IF A>B  AND A> C THEN
        PRINT A; "is highest number"
    ELSEIF B>C  AND B>A THEN
        PRINT B; "is highest number"
    ELSE
        PRINT C; "is highest number"
    END IF              END
```

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2. Find the OUTPUT of the following program.

A.
```
CLS
    DIM  N (5)
    FOR i = 1 TO 5
      READ  N (i)
    NEXT i
    S = 0
    FOR j = 1 TO 5
      PRINT N ( j )
      S = S + N ( j )
    NEXT j
    PRINT "SUM :" ; S
    DATA  5, 10, 15, 20, 25
    END
```
Output:-
- SUM : 75

B.
```
CLS
    DIM  N(4)
    READ N(1), N(2), N(3), N(4)
    PRINT N(1), N(2), N(3), N(4)
    SWAP N(1), N(3)
    SWAP N(2), N(4)
    PRINT N(1), N(2), N(3), N(4)
    DATA 10, 5, 15, 20
    END
```
Output:-
- 10 5 15 20
- 15 20 10 5

C.
```
CLS
    DIM  N$(5)
    FOR A = 1 TO 5
      READ N$ (A)
    NEXT A
    FOR B = 1 TO 5
      PRINT LEFT$ (N$ (B), B)
    NEXT B
    DATA ARUN, BARUN, KARUN, TARUN, SARUN
    END
```
Output:-
- A
  BA
  KAR
  TARU
  SARUN

D.
```
CLS
    DIM  N(2,3)
    N (1, 1) = 5
    N (1, 2) = 10
    N (1, 3) = 8
    N (2, 1) = 4
    N (2, 2) = 6
    N (2, 3) = 7
    FOR A = 1 TO 2
      S = 0
      FOR B =1 TO 3
        S = S + N (A, B)
      NEXT B
      PRINT S
    NEXT A
  END
```
Output:-
- 23
  17

E.
```
CLS
    DIM  NM$(4)  MK (4)
    FOR X = 1 TO 4
      READ   NM$ (X), MK (X)
    NEXT X
    PRINT "Name", "Mark", "Result"
    FOR  Y = 1 TO 4
      IF  MK (Y) >= 40 THEN
        R = "PASSED"
      ELSE
        R =  "FAILED"
      END IF
      PRINT NM$ (Y), MK (Y), R$
    NEXT Y
    DATA  RITU, 40, NITU, 35, SITU, 65
    DATA  GITU, 25
  END
```
Output:-

Name	Mark	Result
RITU	40	PASSED
NITU	35	FAILED
SITU	65	PASSED
GITU	25	FAILED

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A. Given these numbers 45, 25, 44, 12, 63, 36, 8, 15, 50, 27 write a program to find sum the number greater than 50. The program should store given number in the array.

Solution:-

```
CLS
   DIM N(10)
   FOR  A = 1 TO 10 STEP 1
      READ  N(A)
   NEXT A
   S = 0
   FOR B = 1 TO 10 STEP 1
      IF  N(B) > 50  THEN
         S =  S + N(B)
      END IF
   NEXT B
   PRINT "Sum :" ; S
   DATA  45, 25, 44, 12, 63, 36, 8, 15, 50, 27
END
```

B. Enter an array of 10 number and write a program to find sum and average of the number.

Solution:-

```
CLS
   DIM N(10)
   FOR  A = 1 TO 10 STEP 1
      INPUT "Enter any Number:";  N(A)
   NEXT A
   S = 0
   FOR B = 1 TO 10 STEP 1
         Sum =  S + N(B)
   NEXT B
   Avg = Sum / 10
   PRINT "Sum :" ; S
   PRIINT "Average:" ; Avg
END
```

C. Write a program to input 15 different number in an array and display only the numbers divisible by 5.

Solution:-

```
CLS
   DIM  N(15)
   FOR I = 1 TO 15 STEP 1
      INPUT "Enter any number"; N( I )
   NEXT I
   FOR J = 1 TO 15 STEP 1
      R = N( J ) MOD 5
      IF R = 0 THEN
         PRINT N( J ) ;
      END IF
   NEXT J
END
```

D. Enter in an array of 12 numbers and print out the smallest.

Solution:-

```
CLS
   DIM  N(12)
   FOR I = 1 TO 12 STEP 1
      INPUT "Enter any number"; N( I )
   NEXT I
   Smallest = N(1)
   FOR J = 2 TO 12 STEP 1
     IF  Smallest > N( J ) THEN
         Smallest = N ( J )
     END IF
   NEXT J
   PRINT "SMALLEST NUMBER:"; Smallest;
END
```

E. Enter in an array of 15 numbers and print out the Greatest.

Solution:-

```
CLS
   DIM  N(15)
   FOR I = 1 TO 15 STEP 1
      INPUT "Enter any number"; N( I )
   NEXT I
   Max  = N(1)
   FOR J = 2 TO 15 STEP 1
     IF  Max < N( J ) THEN
         Max = N ( J )
     END IF
   NEXT J
   PRINT "GREATEST NUMBER:"; Max;
END
```

F. Given an array A(3,3) store numbers given below in array using READ – DATA statement and find row wise sum.

			sum
4	5	6	➔ 15
7	3	1	➔ 11
8	2	9	➔ 19

Solution:-

```
CLS
   DIM  A(3,3)
   FOR I = 1 T0 3 STEP 1
     FOR J = 1 T0 3 STEP 1
         READ A( I , J )
     NEXT J
   NEXT I
   FOR I = 1 T0 3 STEP 1
     S = 0
     FOR J = 1 T0 3 STEP 1
         S = S +  A( I, J )
     NEXT J
     PRINT S
   NEXT I
   DATA 4, 5, 6, 7, 3, 1, 8, 2, 9
ENE
```

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CC. Write a program that inputs a character and decides whether an input character is alphabet or digit or not.

Solution:-

```
CLS
   INPUT "Enter any character:"; A$
   N  = ASC( UCASE$ (A$) )
   IF N >= 48 AND  N <= 57 THEN
     PRINT "DIGIT"
   ELSEIF  N >=65  AND  N <= 90 THEN
     PRINT "ALPHABET"
   ELSE
     PRINT "SYMBOL"
END
```

1. WAP to generate series 100, 98, 96, …. ,2.

Solution:-

```
CLS
  FOR i=100 TO 2 STEP -2
    PRINT i;
  NEXT i
END
```

2. Write a program to print following output.

a.
```
C
CO
COM
COMP
COMPU
COMPUT
COMPUTE
COMPUTER
```

Solution:-

```
CLS
  A$ = "COMPUTER"
  FOR i=1 TO LEN(A$)
    PRINT LEFT$(A$ , i)
  NEXT i
END
```

b.
```
1 2 3 4 5 6
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

Solution:-

```
CLS
  FOR i=6 TO 1 STEP -1
    FOR j=1 TO i
        PRINT j;
        NEXT j
     PRINT
    NEXT i
  END
```

3. Write a program to count even & odd numbers from following given number sets. 14, 15, 23, 18, 20, 27, 31, 28, 51, 24, 17, 25, 81, 99, 71, 72, 88, 85, 74.

Solution:-

```
CLS
  Ev=0
  Od=0
  FOR i=1 TO 10 STEP 1
    INPUT "Enter number: "; N
    IF N MOD 2 = 0 THEN
        Ev = Ev + 1
    ELSE
        Od = Od + 1
    END IF
  NEXT i
  PRINT "Total even number is: ";Ev
  PRINT "Total odd number is: ";Od
END
```

4. Write a program to print <u>prime</u> number from 1 to 100.

Solution:-

```
CLS
  FOR i=2 TO 100
    FOR j=2 TO i-1
      IF i MOD j = 0 THEN
        GOTO Last
      END IF
      NEXT j
      PRINT i;
    Last:
  NEXT i
END
```

5. Write a program to calculate factorial of any given number.

Solution:-

```
CLS
  Fact = 1
  INPUT "Enter any number: ";N
  FOR i=1 TO N
    Fact = Fact * i
  NEXT i
  PRINT "Factorial number: "; Fact
END
```

6. Write a program to print the greatest number among 10 different numbers.

Solution:-

```
CLS
  Max = 0
  FOR i=0 TO 10
    INPUT "Enter any number: "; N
    IF N > Max THEN
      Max = N
    END IF
    NEXT i
  PRINT "Greatest number is: "; Max
END
```

7. Write a program to print ASCII value of C,O,M,P,U,T,E,R.

Solution:-

```
CLS
  LET A$ = "COMPUTER"
  FOR i=1 TO LEN(A$) STEP 1
    B$ = MID$ (A$ , I , 1)
    PRINT  B$; " = " ; ASC(B$)
  NEXT i
END
```

SUB ... END SUB PROCEDURE

1. WAP to declare a sub procedure module using END.....SUB END to print your name for 10 times.

Solution:-

```
DECLARE SUB Nam( A$ )
  CLS
  CALL Nam( A$ )
END
SUB Nam( A$ )
  FOR i=1 TO 10
    PRINT A$;
  NEXT i
END SUB
```

2. WAP to declare a sub procedure module to find average of two numbers.

Solution:-

```
DECLARE SUB average(A,B)
  CLS
  INPUT " Enter first number ";A
  INPUT " Enter second number ";B
  CALL average(A,B)
END
SUB average(A,B)
  Avg=(A+B)/2
  PRINT " Average of two number: "; Avg
END SUB
```

3. WAP to declare a sub procedure module to find the greatest among 5 different number. Where number are passed as parameters.

Solution:-

```
DECLARE SUB greatest(N)
  FOR i=1 TO 5
    INPUT "Enter any number: "; N
  NEXT i
  CALL greatest(N)
END
SUB greatest(N)
  Max = 1
  IF N > Max THEN
    Max=N
  END IF
  PRINT "Greatest Number: "; Max
END SUB
```

4. WAP to declare a sub procedure module to find cube of a number. The value of number should be input inside the sub procedure module.

Solution:-

```
DECLARE SUB cube( )
  CLS
  CALL cube
END
SUB cube
  INPUT "Enter any number: " ; N
  C=N^3
  PRINT "Cube of number: "; C
END SUB
```

5. WAP to declare a sub procedure module to generate following series up to 10 terms 1, 4, 9, 16, ……..

Solution:-

```
DECLARE SUB series( )
  CLS
  CALL series
END
SUB series
  FOR i=1 TO 10
    PRINT i^2;
  NEXT i
END SUB
```

6. WAP to declare a sub procedure module to generate output as given below.

```
C
CO
COM
COMP
COMPU
COMPUT
COMPUTE
COMPUTER
```

Solution:-

```
DECLARE SUB pattern( )
  CLS
  CALL pattern
END
SUB pattern
  A$ = "COMPUTER"
  FOR i=1 TO LEN(A$)
    PRINT LEFT$(A$,i)
  NEXT i
END SUB
```

7. WAP to declare a sub procedure module to generate multiplication table of a number, where number is passed as a parameter.

Solution:-

```
DECLARE SUB multable ( N)
  CLS
  INPUR "Enter any number: "; N
  CALL multable (N)
END
SUB multable (N)
  FOR i=1 TO 10
    M = N * i
    PRINT N; " * " ; i ; " = " ; M
  NEXT i
END SUB
```

8. WAP to declare sub-procedure module to generate prime number from 1 to 100.

Solution:-

```
DECLARE SUB prime ( )
  CLS
  CALL prime
END
SUB prime
  FOR i=1 TO 100
    FOR j=1 TO i-1
      IF i MOD j=0 THEN
        GOTO Last
      END IF
    NEXT j
    PRINT i ;
    Last:
  NEXT i
END SUB
```

9. WAP to declare sub-procedure module to print factors of a number, where number is passed as a parameter.

Solution:-

```
DECLARE SUB factors (N)
  CLS
  INPUT "Enter any number: "; N
  CALL factors (N)
END
SUB factors (N)
  FOR i=1 TO N
    R=N MOD i
    IF R=0 THEN
      PRINT i ;
    END IF
  NEXT i
END SUB
```

10. WAP to declare sub-procedure module to generate output as given below.

```
          *
        * * *
      * * * * *
    * * * * * * *
  * * * * * * * * *
```

Solution:-

```
DECLARE SUB strpat (A$)
  A$= " ********* "
  CALL strpat (A$)
END
SUB strpat (A$)
  t=10
  FOR i=1 TO 9 STEP 2
    PRINT TAB(t) ; LEFT$(A$,i)
    t=t+1
  NEXT i
END SUB
```

IMPORTANT QUESTION (SUB .... END SUB)

1. WAP using SUB ... END SUB to display reverse of input string. (2072 , 2070)

Solution:-

```
DECLARE SUB rev (A$)
  CLS
  INPUT " Enter any string : " ; A$
  CALL rev (A$)
END
SUB rev (A$)
  FOR i=LEN(A$) TO 1 STEP -1
    B$ = B$ + MID$(A$, i , 1)
  NEXT i
  PRINT "Reverse string : " ; B$
END SUB
```

2. WAP using SUB .... END SUB to print the first ten (10) odd numbers. (2071)

Solution:-

```
DECLARE SUB odd ( )
  CLS
  CALL odd
END
SUB odd
  x = 1
  FOR i=1 TO 10
    PRINT x;
    x = x+2
  NEXT i
END SUB
```

3. WAP using SUB .... END SUB to find the area and circumference of circle. (2071 , 2067)

Solution:-

```
DECLARE SUB area (R)
DECLARE SUB circum (R)
  CLS
  INPUT "Enter radius of circle:" ; R
  CALL area(R)
  CALL circum (R)
END
SUB area (R)
  A=(22/7) * R^2
  PRINT "Area of circle: " ; A
END SUB
SUB circum (R)
  C=2*(22/7) * R
  PRINT "Circumference of circle: " ; C
END SUB
```

4. WAP using SUB .... END SUB to print natural numbers from 1 to 5. (2069)

Solution:-

```
DECLARE SUB series ( )
  CALL series
END
SUB series
  FOR i=1 TO 5
    PRINT i ;
  NEXT i
END SUB
```

5. WAP using SUB .... END SUB to print the series 1,1,2,3,5,8 up to 10^{th} terms.

Solution:-

```
DECLARE SUB fibo ( )
  CALL fibo
END
SUB fibo
  A = 1 : B = 1 : C = 0
  FOR i=1 TO 10
    PRINT A; ",";
    C=A+B
    A=B
    B=C
  NEXT i
END SUB
```

6. WAP using SUB .... END SUB to input three different numbers in the main module the find the greatest number. (2068)

Solution:-

```
DECLARE SUB greatest ( X,Y,Z )
  INPUT " Enter three different numbers : " ; X,Y,Z
  CALL greatest ( X,Y,Z )
END
SUB greatest ( X,Y,Z )
  IF X>Y AND X>Z THEN
    PRINT "Greatest number is: " ; X
  ELSEIF Y>Z AND Y>X THEN
    PRINT "Greatest number is: " ; Y
  ELSE
    PRINT "Greatest number is: " ; Z
  END IF
END SUB
```

7. WAP using SUB .... END SUB module to calculate the area of four walls. (2068)

Solution:-

```
DECLARE SUB area (L,B,H)
  INPUT "Enter Length, Breadth & Height: " ; L,B,H
  CALL area (L,B,H)
END
SUB area (L,B,H)
  A=2*H*(L+B)
  PRINT "Area of four walls: " ; A
END SUB
```

8. WAP using SUB .... END SUB to test whether given number is completely divisible by 13 OR Not. (2067)

Solution:-

```
DECLARE SUB divisible (N)
  INPUT "Enter any number:"; N
  CALL divisible (N)
END
SUB divisible (N)
  IF N MOD 13 = 0 THEN
    PRINT N; "is completely divisible by 13"
  ELSE
    PRINT N; "is not completely divisible by 13"
  END IF
END SUB
```

9. WAP using SUB .... END SUB to check whether a number given by user is positive or negative. (2066)

Solution:-

```
DECLARE SUB check (N)
  INPUT "Enter any number : " ; N
  CALL check (N)
END
SUB check (N)
  IF N > 0 THEB
    PRINT N; "is positive number"
  ELSE
    PRINT N; "is negative number"
  END IF
END SUB
```

10. WAP using SUB .... END SUB to print the following series 9,7,5,3,1. (2065)

Solution:-

```
DECLARE SUB series ( )
  CALL series
END
SUB series
  FOR i=9 TO 1 STEP -2
    PRINT i ;
  NEXT i
END SUB
```

11. WAP using SUB .... END SUB to input a string and count total number of vowels. (2066)

Solution:-

```
DECLARE SUB count (A$)
  INPUT "Enter any string : " ; A$
  CALL count (A$)
END
SUB count (A$)
  C=0
  FOR i=1 TO LEN(A$)
  C$=UCASE$(MID$(A$,i,1))
    IF C$="A" OR C$="E OR C$="I" OR" C$="O"
    OR C$="U" THEN
      C=C+1
    END IF
  PRINT "Total number of vowels: " ; C
  NEXT i
END SUB
```

12. WAP using SUB .... END SUB to print the sum of digits of a given number. (2070)

Solution:-

```
DECLARE SUB sumdigit (N)
  INPUT "Enter any number : " ; N
  CALL sumdigit (N)
END
SUB sumdigit (N)
  S=0
  WHILE N < > 0
    R=N MOD 10
    S=S+R
    N=N/10
  WEND
  PRINT "Sum of digits: " ; S
END SUB
```

FUNCTION ... END FUNCTION PROCEDURE

1. WAP using FUNCTION .... END FUNCITON to find the area of triangle. (2072)

Solution:-

```
DECLARE FUNCTION area (B,H)
  CLS
  INPUT "Enter base of triangle :" ; B
  INPUT "Enter height of triangle :" ;H
  Ar = area(B,H)
  PRINT "Area of triangle: " ; Ar
END
FUNCTION area(B,H)
  A=(1/2) * B * H
  area = A
END FUNCTION
```

2. WAP using FUNCTION....END FUNCITON to calculate and display the volume of a cylinder. (2071)

Solution:-

```
DECLARE FUNCTION volume(R,H)
  CLS
  INPUT "Enter radius of cylinder:" ; R
  INPUT "Enter height of cylinder:" ; H
  Vol = volume(R,H)
  PRINT "Volume of cylinder:" ; Vol
END
FUNCTION volume(R,H)
  Pi = 22/7
  V = Pi * R^2 * H
  volume = V
END FUNCTION
```

3. WAP using FUNCTION .... END FUNCITON to input a string and count the total number of consonants. (2071)

Solution:-

```
DECLARE FUNCTION count (A$)
  CLS
  INPUT "Enter any string :" ; A$
  C=count(A$)
  PRINT "Total number of consonant:" ; C
END
FUNCTION count (A$)
  A$=UCASE$(A$)
  FOR i=1 TO LEN(A$)
  C$ = MID$(A$,i,1)
  IF C$="A" OR C$="E OR C$="I" OR" C$="O"
  OR C$="U" THEN
    GOTO Last
  ELSE
  T=T+1
END IF
Last:
NEXT i
count=T
END FUNCTION
```

4. WAP using FUNCTION....END FUNCITON to calculate average of three number. (70,67,66)

Solution:-

```
DECLARE FUNCTION average (x,y,z)
  CLS
  INPUT "Enter first number :" ; x
  INPUT "Enter second number :" ; y
  INPUT "Enter third number :" ; z
  Avg = average(x,y,z)
 PRINT "Average of three different number :" ; Avg
END
FUNCTION average (x,y,z)
  average = (x+y+z )/3
END FUNCTION
```

5. WAP using FUNCTION .... END FUNCITON to get temperature in Celsius and then print the temperature in Fahrenheit. (2070)

Solution:-

```
DECLARE FUNCTION fahrenheit(C)
  CLS
  INPUT "Enter temperature in Celsius :" ; C
  F = fahrenheit(C)
  PRINT "Temperature in Fahrenheit :" ; F
END
FUNCTION fahrenheit (C)
  fahrenheit = 9 * (C/5) + 32
END FUNCTION
```

6. WAP using FUNCTION....END FUNCITON to calculate and print the simple interest. (2069)

Solution:-

```
DECLARE FUNCTION SI (P,T,R)
  INPUT "Enter Principle :" ; P
  INPUT "Enter Time :" ; T
  INPUT "Enter Rate :" ; R
  PRINT " Simple Interest :" ; SI (P,T,R)
END
FUNCTION SI (P,T,R)
  SI=(P*T*R)/100
END FUNCTION
```

7. WAP using FUNCTION .... END FUNCITON to find the total number of vowels in input string. (2069)

Solution:-

```
DECLARE FUNCTION count (A$)
  CLS
  INPUT "Enter any string :" ; A$
  PRINT "Total number of vowels:";
                              count(A$)
END
FUNCTION count (A$)
  A$=UCASE$(A$)
  FOR i=1 TO LEN(A$)
    C$ = MID$(A$,i,1)
    IF C$="A" OR C$="E OR C$="I" OR
        C$="O" OR C$="U" THEN
      T=T+1
    END IF
  NEXT i
  count=T
END FUNCTION
```

8. WAP using FUNCTION to find the total surface area of a box. (2068 , 2064)

Solution:-

```
DECLARE FUNCTION Area(l,b,h)
  CLS
  INPUT "Enter length of box :" ; l
  INPUT "Enter breadth of box :" ;b
  INPUT "Enter height of box :" ; h
  PRINT "Surface area of box :" ; Area(l,b,h)
END
FUNCTION Area(l,b,h)
  Area = 2 * ( l * h + b * h + l * b )
END FUNCTION
```

9. WAP using FUNCTION....END FUNCITON to get word from user and print it in reverse order. (67,68)

Solution:-

```
DECLARE FUNCTION Reverse$(A$)
  CLS
  INPUT "Enter any string :" ; A$
  PRINT "Reverse string is :" ; Reverse$(A$)
END
FUNCTION Reverse$(A$)
  FOR i=LEN(A$) TO 1 STEP -1
    B$=MID$ (A$,i,1)
    C$ = C$ + B$
  NEXT i
  Reverse$ = C$
END FUNCTION
```

10. WAP using FUNCTION .... END FUNCITON to module to calculate and print the volume of a box. (2066)

Solution:-

```
DECLARE FUNCTION Volume(l,b,h)
CLS
  INPUT "Enter length of box :" ; l
  INPUT "Enter breadth of box :" ;b
  INPUT "Enter height of box :" ; h
  V = Volume(l,b,h)
  PRINT "Volume of box :" ; V
END
FUNCTION Volume( l,b,h)
  Vol = l*b*h
  Volume = Vol
END FUNCTION
```

11. WAP using FUNCTION....END FUNCITON to calculate distance travelled by a body. (2065)

Solution:-

```
DECLARE FUNCTION Distance(U,T,A)
  CLS
  INPUT "Enter the value of u, t & a :" ; U,T,A
  D = Distance(U,T,A)
  PRINT "Travelled Distance :" ; D
END
FUNCTION Distance(U,T,A)
  S = U * T + ( 1/2 ) * A * T^2
  Distance = S
END FUNCTION
```

A. WAP using FUNCTION to find the total number of alphabet "A" is a string.

Solution:-

```
DECLARE FUNCTION count (A$)
  CLS
  INPUT "Enter any string :" ; A$
  PRINT "Total number of A :" ; count(A$)
END
FUNCTION count (A$)
  A$=UCASE$(A$)
  FOR i=1 TO LEN(A$)
    C$ = MID$(A$,i,1)
    IF C$="A" THEN
      T=T+1
    END IF
  NEXT i
  count=T
END FUNCTION
```

B. WAP using FUNCTION to return total number of factors of a given number.

Solution:-

```
DECLARE FUNCITON fact (N)
  CLS
  INPUT "Enter any number :";N
  PRINT "Factors :"
  B=fact(N)
END
FUNCTION fact (N)
  FOR i=1 TO N
    R = N MOD i
    IF R = 0 THEN
      PRINT i ;
    END IF
  NEXT i
END FUNCTIOIN
```

C. WAP using FUNCTION .... END FUNCITON to find out the square of first 10 numbers.

Solution:-

```
DECLARE FUNCITON  square( )
  CLS
  i =square
END
FUNCTION square
  FOR i=1 TO 10
    PRINT i ^2 ;
  NEXT i
  Square = i
END FUNCTIOIN
```

D. WAP using FUNCTION .... END FUNCITON to return the total number of space in a given sentence.

Solution:-

```
DECLARE FUNCITON Space(A$)
  CLS
  INPUT "Enter any string :";A$
  P = Space (A$)
  PRINT "Total number of space :";P
END

FUNCTION Space(A$)
  C = 0
  FOR i=1 TO LEN(A$)
    B$ = MID$ (A$,i,1)
    IF B$ = "  " THEN
      C = C + 1
    END IF
  NEXT i
  Space = C
END FUNCTIOIN
```

E. WAP using FUNCTION .... END FUNCITON calculate volume and total surface area of cube.

Solution:-

```
DECLARE FUNCITON Volume(L)
DECLARE FUNCTION TSarea(L)
  INPUT "Enter side of cube: "; L
  Vol=Volume(L)
  Area=TSarea(L)
  PRINT "Volume of cube :" ; Vol
  PRINT "Total surface area of cube :" ; Area
END

FUNCTION Volume(L)
  V=L^3
  OR,     V=L * L * L
  Volume = V
END FUNCTION

FUNCTION TSarea(L)
  TSA=6 * L^2OR, 6 * L * L
  TSarea=TSA
END FUNCTION
```

F. WAP using FUNCTION .... END FUNCITON to find factorials of N, where N is number passed as a parameter.

Solution:-

```
DECLARE FUNCITON Factorial(N)
  CLS
  INPUT "Enter any number :";N
  PRINT "Factorials : "; Factorial(N)
END
FUNCTION Factorial(N)
  Fact = 1
  FOR  i=1 TO N
    Fact = Fact * i
  NEXT i
  Factorial = Fact
END FUNCTIOIN
```

G. WAP using FUNCTION .... END FUNCITON to return the total number of word in a given sentence.

Solution:-

```
DECLARE FUNCITON count(A$)
  CLS
  INPUT "Enter any string :";A$
  PRINT "Total number of space :"; count (A$)
END
FUNCTION count(A$)
  C = 1
  FOR i=1 TO LEN(A$)
    B$ = MID$ (A$,i,1)
    IF B$ = "  " THEN
      C = C + 1
    END IF
  NEXT i
  count = C
END FUNCTIOIN
```

H. WAP using FUNCTION .... END FUNCITON to find product of any three numbers.

Solution:-

```
DECLARE FUNCITON Product(x,y,z)
  CLS
  INPUT "Enter any three numbers: " ; x,y,z
  P = Product(x,y,z)
  PRINT "Product of any three number: " P
END
FUNCTION Product(x,y,z)
  Product = x * y * z
END FUNCTIOIN
```

I. WAP using FUNCTION .... END FUNCITON to find out the greatest number among three different numbers.

Solution:-

```
DECLARE FUNCTION Greatest(A,B,C )
  CLS
  INPUT "Enter first number :" ; A
  INPUT "Enter second number :"; B
  INPUT "Enter third number :" ; C
  PRINT "Greatest Number is:";Greatest(A,B,C )
END
FUNCTION Greatest(A,B,C )
  IF A>B AND A<C THEN
     Greatest = A
  ELSEIF B>C AND B>A THEN
      Greatest = B
  ELSE
      Greatest = C
  END IF
END FUNCTION
```

J. WAP using FUNCITN .... END FUNCTION that returns a number in reverse order.

Solution:-

```
DECLARE FUNCITON Revnum(N)
  CLS
  INPUT "Enter any number:"; N
  R = Revnum(N)
  PRINT "Number in reverse order:"; R
END
FUNCTION Revnum(N)
   S = 0
   WHILE N < > 0
         R = R MOD 10
         S = S * 10+ R
         N = N \ 10
   WEND
   Revnum = S
END FUNCTION
```

FILE HANDLING PROGRAM

A. WAP to create a sequential data file "STUDENT.DAT" then, store Name, Class, Roll Number, Section and Address of the student.

Solution:-

```
CLS
  OPEN "STUDENT.DAT" FOR OUTPUT AS #1
  INPUT "Enter Name :" ; N$
  INPUT "Enter Class :" ; C
  INPUT "Enter Roll Number :" ; R
  INPUT "Enter Section :" ; Sec$
  INPUT "Enter Address :" ; A$
  WRITE #1, N$ , C , R , Sec$ , A$
  CLOSE #1
END
```

B. WAP to display all the records of data file "STUDENT.DAT" created in (1).

Solution:-

```
CLS
OPEN "STUDENT.DAT" FOR INPUT AS #1
PRINT "Name", "Class", " Roll No", "Section", "Address"
DO WHILE NOT EOF(1)
  INPUT #1 , N$ , C , R , Sec$ , A$
  PRINT  N$ , C , R , Sec$ , A$
LOOP
CLOSE #1
END
```

C. WAP to store Name, Address, Age and salary of employees in dat file "STAFF.DAT" .

Solution:-

```
CLS
OPEN "STAFF.DAT" FOR OUTPUT AS #2
DO
   INPUT "Enter Employee Name :" ; N$
   INPUT "Enter Employee Address :" ; A$
   INPUT "Enter Employee Age :" ; A
   INPUT "Enter Employee Salary :" ; S
   WRITE #2, N$, A$, A, S
   INPUT "Add any record (Y/N) :" ; Ans$
LOOP WHILE UCASE$ (Ans$) = " Y "
CLOSE #2
END
```

D. WAP to add records in data file "STUDENT.DAT" created in (1).

Solution:-

```
CLS
   OPEN "STUDENT.DAT" FOR APPEND AS #1
   More:
   INPUT "Enter Name :" ; N$
   INPUT "Enter Class :" ; C
   INPUT "Enter Roll Number :" ; R
   INPUT "Enter Section :" ; Sec$
   INPUT "Enter Address :" ; A$
   WRITE #1, N$ , C , R , Sec$ , A$
   INPUT "Add any more record (Y/N) :" ;Ans$
   IF Ans$ = " Y " THEN
      GOTO More
   CLOSE #1
END
```

IMPORTANT QUESTIOIN (FILE HANDLING)

1. A sequential data file called "MARK.DAT" contains Roll no. , Name, English, Nepali and Math fields write a program to display all the contents of the data file. (2065 Sup/ 2067 Regular)

Solution:-

```
CLS
   OEPN "MARK.DAT" FOR INPUT AS #1
   PRINT "Roll no","Name","English","Nepali", "Math"
   DO WHILE NOT EOF(1)
      INPUT #1, R, N$, E, N, M
      PRINT R, N$, E, N, M
   LOOP
   CLOSE #1
END
```

2. Write a program to create a sequential data file "Employee.dat" to store employee's Name, Address, Age, Gender and salary. (2066)

Solution:-

```
CLS
OPEN "STAFF.DAT" FOR OUTPUT AS #1
   INPUT "Enter Employee Name :" ; N$
   INPUT "Enter Employee Address :" ; A$
   INPUT "Enter Employee Age :" ; A
   INPUT "Enter Employee Gender :" ; G$
   INPUT "Enter Employee Salary :" ; S
   WRITE #1, N$, A$, A, G$, S
  CLOSE #1
END
```

3. A data file "LIB.TXT" consists of Book's Name, Author's Name and price of book's. Write a program to count and display the total number of records present in the file. (2066 Supplementary)

Solution:-

```
CLS
  OPEN "LIB.TXT" FOR INPUT AS #1
  C = 0
  PRINT "Book's Name" , "Authors Name" , "Price"
  DO WHILE NOT EOF(1)
     INPUT #1 , N$, AN$, P
     C = C + 1
  LOOP
  PRINT "Total number of Record :" ; C
  CLOSE #1
END
```

4. A sequential data file "EMP.DAT" contains Name , Post and salary fields of information about employees. Write a program to display all the information of employees along with tax amount also (Tax is 15% of salary) (2067)

Solution:-

```
CLS
  OPEN "EMD.DAT" FOR INPUT AS #1
  PRINT "Name" , "Post" , "Salary" , "Tax"
  DO WHILE NOT EOF(1)
     INPUT #1, N$, P$, S
     T = (S * 15) / 100
     PRINT N$, P$, S, T
  LOOP
CLOSE #1
END
```

5. A sequential data file called "student.dat" contains same records under the fields Name, English, Nepali and Computer. Write a program to add some records in the same sequential data file. (2068 Regular)

Solution:-

```
CLS
   OPEN "student.dat" FOR APPEND AS #1
   Top:
   INPUT "Enter Name :" ; N$
   INPUT "Enter Marks of English :" ; E
   INPUT "Enter Marks of Nepali :" ; N
   INPUT "Enter Marks of Computer :" ; C
   WRITE #1, N$, E, N, C
   INPUT "Add any more Record (Y/N) :" ; Ans$
   IF Ans$ = " Y " THEN
      GOTO Top
   END IF
   CLOSE #1
END
```

6. Write a program to view those records from "Employee.dat" sequential data file having employee's Name, Department, Appointment data and salary whose salary is more than RS. 5000. (2068 Supplementary)

Solution:-

```
CLS
  OPEN "Employee.dat" FOR INPUT AS #5
  PRINT "Name" , "Department" , "Appointment"
, "Salary"
  DO WHILE NOT EOF(5)
    INPUT #5, N$, D$, A$, S
    IF S >= 5000 THEN
      PRINT N$, D$, A$, S
    END IF
  LOOP
  CLOSE #5
END
```

7. Write a program to create a data file "teldir.dat" to store Name, Address and Telephone number of employee's according to need of the user. (2069)

Solution:-

```
CLS
  OPEN "teldir.dat" FOR OUTPUT AS #1
  More:
  INPUT "Enter Name :" ; N$
  INPUT "Enter Address :" A$
  INPUT "Enter Telephone no :" ; T
  WRITE #1, N$, A$, T
  INPUT "Any more Record (Y/N) :" ; Ans$
  IF Ans$ = " Y " THEN
    GOTO More
  END IF
  CLOSE #1
END
```

8. A sequential data file "STAFF.DAT" contains the Name, Address, post and salary of employee's. Write a program to read and display all the records stored in the above data file.(2069 Sup)

Solution:-

```
CLS
  OPEN "STAFF.DAT" FOR INPUT AS #1
  PRINT "Name" , "Address" , "Post" , "Salary"
  DO WHILE NOT EOF(1)
    INPUT #1 , N$, A$, P$, S
    PRINT N$, A$, P$, S
  LOOP
  CLOSE #1
END
```

9. A sequential data file called "MARKS.DAT" contains Name, English, Nepali, Math and Science fields. Write a program to display all the contents of that data file. (2070 Regular)

Solution:-

```
CLS
  OPEN "MARKS.DAT" FOR INPUT AS #1
  PRINT "Name","English" ,"Nepali" ,"Math", "Science"
  DO WHILE NOT EOF(1)
    INPUT #1 , N$, E , N , M , S
    PRINT N$, E , N , M , S
  LOOP
  CLOSE #1
END
```

10. A sequential data file "Record.dat" has records with field Name, Address, Age and salary. Write a program to display only those records whose Age is greater than 26. (2070 Sup)

Solution:-

```
CLS
OPEN "Record.dat" FOR INPUT AS #1
PRINT "Name" , "Address" , "Age" , "Salary"
DO WHILE NOT EOF(1)
INPUT #1, N$ , A$ , A , S
IF A > 26 THEN
PRINT N$ , A$ , A , S
END IF
LOOP
CLOSE #1
END
```

11. A data file "salary.dat" contains the information of employee regarding their Name, Post and salary. Write a program to display all the information at employee whose salary is greater than 15000 and less than 40000. (2071)

Solution:-

```
CLS
  OPEN "salary.dat" FOR INPUT AS #1
  DO WHILE NOT EOF(1)
    INPUT #1 , N$ , P$ , S
    IF S > 15000 AND S <= 40000 THEN
      PRINT "Name :" ; N$
      PRINT "Post :" ; P$
      PRINT "Salary :" ; S
    END IF
  LOOP
  CLOSE #1
END
```

12. A sequential data file called "MARK.DAT" has stored data under the field heading Roll No, Name, English, Nepali and Math. Write a program to display all the information of those students whose marks in Nepali is more than 50. (2071 Supplementary)

Solution:-

```
CLS
  OPEN "MARK.DAT" FOR INPUT AS #1
  PRINT "Roll no" , "Name" , "English", "Nepali" , "Math"
  DO WHILE NOT EOF(1)
  INPUT #1, R , N$ , E , N , M
  IF N > 50 THEN
    PRINT R , N$ , E , M , M
  END IF
  LOOP
  CLOSE #1
END
```

13. A sequential data file called "MARK.DAT" contains Name, Age, City and Telephone field. Write a program to display all the contents of that data file. (2072 Regular)

Solution:-

```
CLS
   OEPN "MARK.DAT" FOR INPUT AS #1
   DO WHILE NOT EOF(1)
      INPUT #1, N$, A , C$ , T$
      PRINT "Name :" ; N$
      PRINT "Age :" ; A
      PRINT "City :" ; C$
      PRINT "Telephone :" ; T$
   LOOP
   CLOSE #1
END
```

14. Write a program to store records regarding the information of Book's number, Book's Name and Writer's Name in a sequential data file called "Library.dat" . (2065 Regular , 2063 Regular)

Solution:-

```
CLS
  OPEN "Library.dat" FOR OUTPUT AS #3
  More:
  INPUT "Enter Book's Name :" ; N$
  INPUT "Enter Writer Name :" ; WN$
  INPUT "Enter Price of Book :" ; P
  WRITE #3 , N$ , WN$ , P
  INPUT "Add any more Records (Y/N) :"; A$
  IF A$ = " Y " OR A$ = " y " THEN
    GOTO More
  END IF
  CLOSE #3
END
```

15. Write a program in QBASIC to open a sequential data file "WMP.DAT" which contains the employee records, Name, Address and Phone number and display all the records as well as total number of records stored in the file. (2064)

Solution:-

```
CLS
  OPEN "WMP.DAT" FOR INPUT AS #1
  P = 0
  PRINT "Name" , "Address" , "Phone"
  DO WHILE NOT EOF(1)
    INPUT #1 , N$ , A$ , P$
    PRINT N$ , A$ , P$
    P = P + 1
  LOOP
  PRINT "Total Number of Records :" ; P
  CLOSE #1
END
```

16. Write a program to create a data file "MARK.DAT" and store Name, Class, Roll no, and Marks secured by students in 5 subjects of 50 students.

Solution:-

```
CLS
  OPEN "MARK.DAT" FOR OUTPUT AS #1
  FOR i = 1 TO 50 STEP 1
    INPUT "Enter Name :" ; N$
    INPUT "Enter Class :" ; Class
    INPUT "Enter Roll no. :" ; R
    INPUT "Enter marks in Computer :" ; C
    INPUT "Enter marks in Nepali :" ; N
    INPUT "Enter marks in English :" ; E
    INPUT "Enter marks in Science :" ; S
    INPUT "Enter marks in Mathematics :" ; M
    WRITE #1 , N$ , Class , R , C , N , E , S , M
  NEXT i
  CLOSE #1
END
```

BEST OF LUCK