CE 150 COMPUTER PROGRAMMING

SUB PROCEDURES in Basic

by

IRFAN-UL-HASSAN

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Sub Procedure

- There are two types of sub procedures in Basic:
- Function   (FUNCTION)
- Subroutine   (SUB)

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FUNCTION

- FUNCTION is a subprogram which returns a single value.
- Example is the intrinsic function SQR
  SQR(4) returns 2 in the function name SQR
- ASC(A$) returns a value 0-255 to the name ASC

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SUBROUTINE

- Subroutine is a subprogram which may or may not return any value.
- It may return more than one values.
- The values are not returned to the SUB name.
- Rather they are returned to the arguments

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Example

FUNCTION SSQR(A as SINGLE)
    SSQR=SQR(ABS(A))
END FUNCTION
This function returns square root of absolute value of a single precision number.
Use:
X!=SSQR(Y!) or PRINT SSQR(30.)

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Example

FUNCTION Area(A as SINGLE, B as SINGLE)
    AREA=A*B
END FUNCTION
 This function returns area of a rectangle whose sides are A and B.
Use:
 A1=Area(3.04, 4.50) or Print Area(X!,Y!)

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Function FACT

```
FUNCTION FACT(x AS INTEGER)
    IF x = 0 OR x = 1 then
            FACT=1
    ELSE
        A!=1.
        For I%=x to 2 step -1
                A!=A!*I%
        Next I%
            FACT=A!
    ENDIF
END FUNCTION
```

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Variables within SUB Procedure

The variables used within the sub procedure are called local variables.

These variables are not available outside the sub procedures.

These variables die out when the control exits from the sub procedure.

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SUBROUTINE SUB PROGRAM

```
SUB RECT(X AS SINGLE, Y AS SINGLE, Area AS
    SINGLE, Ixx AS SINGLE, Iyy AS SINGLE, Perim
    AS SINGLE)
        AREA=X*Y
        Ixx=X*Y^3/12
        Iyy=Y*X^3/12
        Perim=2*(X+Y)
END SUB
```

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STATIC Variables

The STATIC variables used within the sub procedure are called local variables.

These variables are not available outside the sub procedures.

These variables are preserved within the sub procedure in subsequent calls.

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Another Subroutine

```
SUB PrintArray2 ( X () as single )
  I1%=LBOUND(X,1) : j1%=UBOUND(X,1)
  I2%=LBOUND(X,2) : j2%=UBOUND(X,2)
  FOR I%= I1% to j1%
      FOR J%=I2% to j2%
          Print X(I%,J%),
      NEXT J%
      PRINT
  NEXT I%
END SUB
```

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EXAMPLE

- SUB HitsOnPage()
      STATIC Count AS LONG
      Count=Count+1
      Print "You are " + STR$(Count) + "th
  user "
  END SUB

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