

TYPES AND CONVERSIONS

Integer	Real	String	Char	Boolean	Prefixes: i r s c b
StrToInt(edtAge.Text)					Text to whole number
StrToFloat(edtPrice.Text)					Text to real number
IntToStr(iTotal)					Whole number to text
FloatToStrF(r, ffFixed, 8, 2)					Real to text, 2 decimals
FloatToStrF(r, ffCurrency, 8, 2)					As money, e.g. R12.50
Ord('A')	Chr(65)				Character to code, and back

MATHS

17 div 5 = 3	Whole number division
17 mod 5 = 2	Remainder. x mod 2 = 0 means even
17 / 5 = 3.4	Real division (result is Real)
Round(r) Trunc(r)	Round off, or cut off the decimals
Sqr(x) Sqrt(x)	Square, square root
Random(6) + 1	1 to 6. Call Randomize once first
Power(2, 10)	2 to the power 10 (uses Math)

DECISIONS AND LOOPS

```

if iMark >= 50 then
    sResult := 'Pass'      // no ; before else!
else
    sResult := 'Fail';

case iMonth of
    12, 1, 2 : sSeason := 'Summer';
    3..5     : sSeason := 'Autumn';
else sSeason := 'Other';
end;

for i := 1 to 10 do ...    // known number of times
for i := 10 downto 1 do ...
while not bFound do ...   // may run 0 times
repeat ... until iGuess = iNum; // runs at least once

```

More than one statement inside? Use begin ... end;

STRINGS (first character is position 1)

Length(s)	Number of characters
Pos('#', s)	Position of the first #, or 0
Copy(s, 1, 3)	3 characters from position 1
Delete(s, 1, iPos)	Removes characters (changes s)
Insert('Mr ', s, 1)	Adds text (changes s)
UpperCase(s) LowerCase(s)	Change the case
UpCase(s[i])	One character as a capital
Trim(s)	Remove spaces at the ends
s[i] in ['A'..'Z']	Is the character a capital?

SPLITTING A LINE: THANDI#82

```

iPos := Pos('#', sLine);
sName := Copy(sLine, 1, iPos - 1); // before the #
Delete(sLine, 1, iPos);           // remove up to the #
iMark := StrToInt(sLine);         // what's left

```

TEXT FILES

```

if not FileExists('data.txt') then begin
    ShowMessage('File not found'); Exit;
end;
AssignFile(tFile, 'data.txt');
Reset(tFile); // Rewrite = new, Append = add
while not Eof(tFile) do
begin
    ReadLn(tFile, sLine); // WriteLn(tFile, s) to write
    ...
end;
CloseFile(tFile);

```

ARRAYS

```

var arrMarks : array[1..30] of Integer;
    arrSales : array[1..3, 1..5] of Integer; // [row, col]

Inc(iCount); arrNames[iCount] := sName; // add to the end
for r := 1 to 3 do
    for c := 1 to 5 do
        iTotal := iTotal + arrSales[r, c];
Swap: iTemp := a[i]; a[i] := a[j]; a[j] := iTemp;

```

CLASSES (OOP)

```

type Tlearner = class
private
    fName : String; fMark : Integer;
public
    constructor Create(sName : String; iMark : Integer);
    function getMark : Integer;
    procedure setMark(iMark : Integer);
    function toString : String;
end;

function Tlearner.getMark : Integer;
begin
    Result := fMark;
end;

objL := Tlearner.Create('Aisha', 91); // on the form

```

DATABASES IN CODE

```

tblLearners.First;
while not tblLearners.Eof do
begin
    if tblLearners['Mark'] >= 80 then Inc(iCount);
    tblLearners.Next; // never forget Next
end;
tblLearners.Edit; tblLearners['Mark'] := 75; tblLearners.Post;

qry.SQL.Text := 'SELECT * FROM tblLearners ' +
                'WHERE Town = ' + sTown + ' ';
qry.Open; // SELECT. qry.ExecSQL for INSERT, UPDATE, DELETE

```

SQL

```

SELECT FirstName, Mark FROM tblLearners
WHERE Grade = 12 AND Surname LIKE "M%"
ORDER BY Mark DESC

SELECT Town, COUNT(*) AS Num, AVG(Mark) AS AvgMark
FROM tblLearners GROUP BY Town HAVING COUNT(*) > 3

SELECT L.FirstName, P.Amount FROM tblLearners L, tblPayments P
WHERE L.LearnerID = P.LearnerID

INSERT INTO tblLearners (ID, FirstName) VALUES ("L13", "Mia")
UPDATE tblLearners SET Mark = Mark + 2 WHERE Grade = 10
DELETE FROM tblPayments WHERE Amount < 500

BETWEEN 60 AND 80 · IN ("A", "B") · YEAR(DOB) · ROUND(x, 1) · WHERE filters
rows, HAVING filters groups

```

COMMON ERRORS AND EXAM TIPS

- **;' not allowed before 'ELSE'**: remove the semicolon before else.
- **Undeclared identifier**: spelling, a missing var, or a missing unit in uses.
- **" is not a valid integer value**: StrToInt on an empty edit box.
- **Access violation**: the object was never created with .Create.
- **Range check error**: an index outside the array, or row and column swapped.
- Read the whole question, use the given component and variable names, and save often.