

Section 10.3 - Files

Layer 6: High-Order Language

Syllabus Content Section 10: Data Types and Structures

S10.3.1 Show understanding of why files are needed ✓

Data need to be stored *permanently*. One approach is to use a file. For example, any data held in an array while your program is executing will be lost when the program stops. You can save the data out to a file and read it back in when your program requires it on subsequent executions.

S10.3.2 Write pseudocode to handle text files that consist of one or more lines ✓

Handling text files

```
OPENFILE <file identifier> FOR <file mode>
READFILE <file identifier>, <variable>
WRITEFILE <file identifier> , <data>
CLOSEFILE <file identifier>
```

READ	for data to be read from the file
WRITE	for data to be written to the file. A new file will be created and any existing data in the file will be lost.
APPEND	for data to be added to the file, after any existing data.

- EXAMPLE – handling text files

```
//This example uses the operations together, to copy all the lines
from FileA.txt to FileB.txt, replacing any blank lines by a line of
dashes.
DECLARE LineOfText : STRING
OPENFILE "FileA.txt" FOR READ
OPENFILE "FileB.txt" FOR WRITE
WHILE NOT EOF("FileA.txt")
    READFILE "FileA.txt", LineOfText
    IF LineOfText = "" THEN
        WRITEFILE "FileB.txt", " -----
-- "
    ELSE
        WRITEFILE "FileB.txt", LineOfText
    ENDIF
ENDWHILE
CLOSEFILE "FileA.txt"
CLOSEFILE "FileB.txt"
```

Handling random files

```
OPENFILE <file identifier> FOR RANDOM
SEEK <file identifier>, <address>
GETRECORD <file identifier>, <variable>
PUTRECORD <file identifier>, <variable>
```

- Example – handling random files

```
//The records from positions 10 to 20 of a file StudentFile.Dat are
moved to the next position and a new record is inserted into
position 10.
DECLARE Pupil : Student
DECLARE NewPupil : Student
DECLARE Position : INTEGER

NewPupil.LastName ← "Johnson"
NewPupil.Firstname ← "Leroy"
NewPupil.DateOfBirth ← 02/01/2005
NewPupil.YearGroup ← 6
NewPupil.FormGroup ← 'A'

OPENFILE "StudentFile.Dat" FOR RANDOM
FOR Position ← 20 TO 10 STEP -1
    SEEK "StudentFile.Dat", Position
```

```
GETRECORD "StudentFile.Dat", Pupil
SEEK "StudentFile.Dat", Position + 1
PUTRECORD "StudentFile.Dat", Pupil
NEXT Position

SEEK "StudentFile.Dat", 10
PUTRECORD "StudentFile.Dat", NewPupil

CLOSEFILE "StudentFile.dat"
```