COS10009/COS60006 Test 2 - REVISION

Assessment Details

- **Assessment**: Test 2 – TEST PREPARATION

- **Unit Codes**: COS10009 and COS60006

- **Duration**: 90 minutes

Student Name: _____

Student ID: _____

Instructions to Candidates

- This test has two sections

    - A Pass level section – **you must complete all these questions.**

    - A Higher Level Pass section - you **may choose** to complete this question for extra credit

- Remember to watch your time.

- This booklet must be handed in at the conclusion of the test.

Official Use

☐ Extra Credit Pass   ☐ Basic Pass   ☐ Fix and Resubmit   ☐ Redo

Q1. Answer the following questions:

a) Complete the following table by suggesting which data type would be appropriate for storing the variables shown:

Variable	Pascal Data Type:	C Data Type:
Capacity of a train carriage		
password		
4.67		
'm','f'		

b) Write the code for a **loop** in the C programming language that will increment a counter from 0 to 5, writing out the counter value with each iteration. Use the C short-hand: **counter++** to increment counter by 1 in each iteration of the loop.

c) Write a function in the C or Pascal programming language that takes an integer argument and prints the integer to the terminal window. The program should then read an integer from the terminal user and return that to the calling program.

Q2. **Demonstrate how the following code is executed in the computer.**

```pascal
function ???(const data: array of Integer): Integer;
var
    i: Integer;
begin
    result := 0;

    for i := Low(data) to High(data) do
    begin
        result := result + data[ i ];
    end;
end;
```

Hand Execute the program with the following parameter values to see if you can work out what it does.

data	Result
[5, 4, -2, -1]	
[1, -3, 3, -2]	

Q3. Hand execute the following code:

```
procedure incrementElements(const data: array of Integer)
var
    i: Integer;
begin
    for i := Low(data) to High(data) do
    begin
        data[i] := data[i] - 1;
    end;
end;
```

Hand execute the function with the following parameter values.

data
[1, 4, -3, 2, 5]

array (after execution): | | | | | |

Q4. Complete the missing code in this C program:

```c
bool checkIfFinished()
{
  my_string answer;
  bool result;

  _____ = read_string("Do you want to enter another student? ");
  answer.str[0] = (char) tolower(answer.str[0]);

  switch (_____.str[0]) {
  case 'n':
    result = true;
    break;
  case 'x':
    result = true;
    break;
  default:
    result = false;
  }
  return _____;
}
```

The above code uses the following function:

```c
my_string read_string(const char* prompt)
```

Q5. Complete the missing code in this Pascal program:

```pascal
program StudentSystem;

type StudentRecord = record
    studentName: String;
    studentId: Integer;
    end;

studentArray = array of StudentRecord;

procedure readInStudent(var students: StudentArray);
var index: Integer;
begin
    index := Length(students);

    _____;
    writeLn('Please enter student name:');
    readLn(students[index].studentName);
end;

function checkIfFinished(): Boolean;
var answer: String;
begin
    writeLn('Do you want to enter another student?');
    readLn(answer);
    LowerCase(answer);
    case answer of
        'no': result := true;
        'n': result := true;
        'x': result := true;
    else
        result := false;
    end;
end;

procedure readInStudents(var students: StudentArray);
begin
    repeat
        _____;
    until checkIfFinished() = true;
end;

procedure Main();
var UniStudents: StudentArray;
begin
    setLength(UniStudents, 0);
    |
    readInStudents(_____);
end;
```

Q6. Draw a structure chart for the code in Q5 above.

End of Task