1 (a) Simple algorithms usually consist of input, process and output.

The statements in the following table are in a generic programming language.

Complete the table by placing ticks in the relevant boxes.

Item	Statement	Input	Process	Output
1	String1 = "Hello World"			
2	DISPLAY RIGHT(String1, 5)			
3	READFILE (MyFile, String2)			
4	WRITEFILE (MyFile, "Data is " & String2)			

[6]

(b) (i) Complete the following two ser	ntences
--	---------

(ii) The following table shows the values of three variables.

Variable	Value
FlagA	TRUE
FlagB	FALSE
FlagC	TRUE

Evaluate these expressions.

Expression	Evaluates to
(FlagA AND FlagB) OR FlagC	
FlagA AND (FlagB OR FlagC)	
(NOT FlagA) OR (NOT FlagC)	

[3]

(c)	The loop construct	(also known :	as repetition	or iteration)	appears in man	v algorithms
١	٠,	The loop contention	(0.100 1.110 1111	ao roponnon	01 11010111		,

Use pseudocode to write a post-condition loop to output all the odd numbers between 100 and 200.
r.a

In class exercise ch13

Name: Marks:

A sports club maintains a record of the email address of each of its members. The details are stored in a text file, <code>EmailDetails.txt</code>. The format of each line of the text file is as follows:

<MembershipNumber><EmailAddress>

- MembershipNumber is a four-character string of numerals. EmailAddress is a variable-length string.

Membership of the club has increased and a four-character membership number is no longer adequate.

A procedure, ${\tt MakeNewFile}$, is required to perform the following actions:

- Create a new file, NewEmailDetails.txt
- Read a line from file EmailDetails.txt
- 2. 3. Extend MembershipNumber by adding two leading zero digits (for example, "1234" becomes "001234")
 Write the new line to file NewEmailDetails.txt
- 5

	te pseudocode for the procedure MakeNewFile.			
For the built-in functions list, refer to the Appendix on page 14.				
	[8] [8] Inction, IsEmailValid, is to be written to test for a valid email address format.			
A fu	Inction, IsEmailValid, is to be written to test for a valid email address format. email address has a valid format if it obeys the following three rules: It contains a single '@' symbol. The '@' symbol must be preceded by at least one character. The '@' symbol must be followed by at least three characters.			
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Name:

Marks:

Question	Answer					Marks	
1(a)	Item	Statement		Input	Process	Output	6
	1	1 SomeChars = "Hello World"			✓		
	2	OUTPUT RIGHT(String1,5)			✓	✓	
	3	READFILE (MyFile, String2)		✓			
	4	WRITEFILE (MyFile, "Data is	" & String2)		✓	✓	
	Row 1 a Row 2 r Row 3 a	s follows: as shown no marks if tick in Input column, othe as shown no marks if tick in Input column, othe					
1(b)(i)		eger / Real / Single / Double / Floati blean	ng Point / Float				2
1(b)(ii)		Expression	Evaluates to				3
	(Flag	A AND FlagB) OR FlagC	TRUE				
	FlagA	AND (FlagB OR FlagC)	TRUE				
	(NOT	FlagA) OR (NOT FlagC)	FALSE				
	1 mark	per answer					
1(c)	MyCoun	t ← 101					4
	MyC	PUT MyCount ount ← MyCount + 2 MyCount > 199					
	1 mark f	or each of the following:					
	RepMet	inter initialisation eat Until loop hod for choosing (correct range of) put all odd numbers in the range	odd numbers				
	Note: Co	ounter variable name must be cons	istent				

Name:

Marks:

	Name. Wand.	
Question	Answer	Marks
5(a)	PROCEDURE MakeNewfile DECLARE OldFileLine : STRING DECLARE NewFileLine : STRING	8
	OPENFILE "EmailDetails" FOR READ OPENFILE "NewEmailDetails" FOR WRITE	
	WHILE NOT EOF("EmailDetails") READFILE "EmailDetails", OldFileLine NewFileLine ← "00" & OldFileLine WRITEFILE "NewEmailDetails", NewFileLine ENDWHILE	
	CLOSEFILE "EmailDetails" CLOSEFILE "NewEmailDetails"	
	ENDPROCEDURE	
	Mark as follows: 1. Variable declaration of STRING for OldFileLine (or equivalent)	
	2. Open EmailDetails for READ	
	3. Open NewEmailDetails for WRITE	
	4. Correct loop checking for EOF (EmailDetails)	
	5. Reading a line from EmailDetails in a loop	
	6. Correct concatenation in a loop	
	7. Writing a line to NewEmailDetails in a loop	
	Closing both files	
5(b)	Invalid string examples:	6
	A string with nothing before '@'	

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	5(b)	Invalid string examples:	6	
		A string with nothing before '@'		
		A string with nothing after '@'		
		A string with 1 or 2 characters after '@'		
		A string with no '@'symbol		
		A string with more than one '@' symbol		
		Explanation		
		Sensible explanation mapping each given string to an individual rule		
		1 11 3 3 3		
		One mark for string		
		One mark for explanation		
		Each rule should be tested once only		