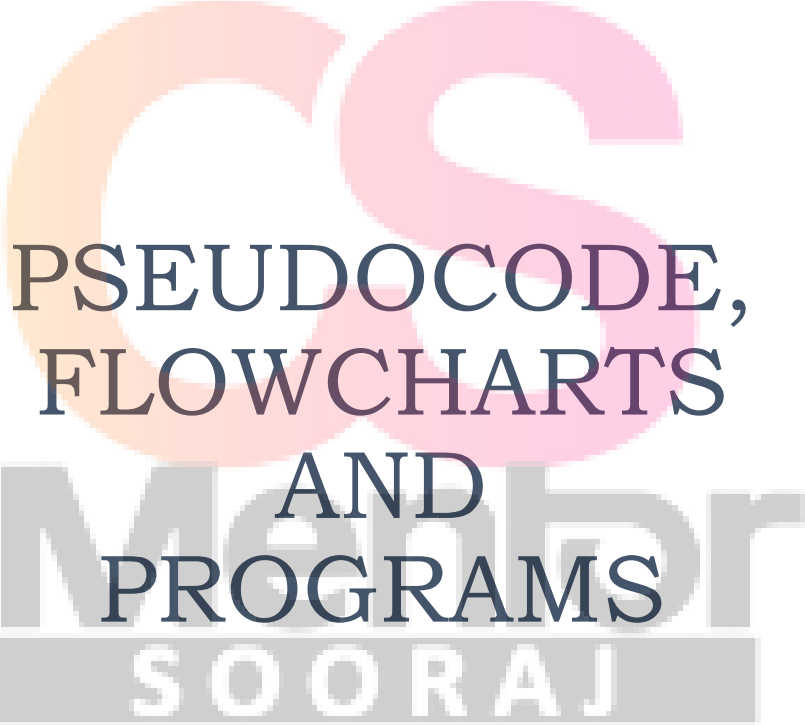


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# HANDOUT FOR CHAPTERS 10 AND 11



PSEUDOCODE,  
FLOWCHARTS  
AND  
PROGRAMS

---

## Past questions

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- 1 Five data types and five data samples are shown below.

Draw a line to link each data type to the correct data sample.

Data type	Data sample
Integer	'a'
Real	2
Char	2.0
String	True
Boolean	"Twelve"

[4]

- 2 Explain the difference between a variable and a constant in a program.

.....

.....

.....

.....[2]

- 3 Identify **three** different loop structures that you can use when writing pseudocode.

a. ....

.....

b. ....

.....

c. ....

.....[3]

- 4 Four programming concepts and four examples of programming code are shown below.

Draw a line to link each programming concept to the correct example of programming code.

Programming concept	Example of programming code
Counting	Sum = Sum + Value[n]
Repetition	IF Value = 10 THEN PRINT 'X'
Selection	FOR Counter = 1 TO 10
Totalling	Amount = Amount + 1
	Sum = Num1 + Num2

[4]



5 Read this section of program code that inputs 10 positive numbers and then outputs the smallest number input.

```
1  Small = 1000
2  Counter = 0
3  REPEAT
4INPUT Num
5IF Num < Small THEN Small = Num
6Counter = Counter + 1
7  UNTIL Counter = 10
8  PRINT Small
```

Identify **three** changes you would need to make to find the largest number input instead of the smallest number.

1 .....  
.....  
2 .....  
.....  
3 .....  
.....[3]

(ii) Rewrite the program code with your changes.

.....  
.....  
.....  
.....  
.....  
.....  
.....[3]

- 6 A program will be written to store information about members of a swimming club. The following membership details will be recorded:

Name

Gender

Status:

Senior

Junior

Fee

Team member (Yes or No)

Choose a suitable data type for each of the membership details to be recorded.

Membership details	Data type
Name	
Gender	
Status	
Fee	
Team member	

[5]



7 REPEAT ... UNTIL is one type of loop structure.

Identify and describe **two** other types of loop structure that you could use when writing pseudocode.

Loop structure 1 .....

Description.....

.....

Loop structure 2 .....

Description.....

.....[4]



8 Read this section of program code that inputs 10 positive numbers and then outputs the total.

```
1  Total = 0
2  Counter = 0
3  REPEAT
4INPUT Num
5Total = Total + Num
6PRINT Total
7Counter = Counter + 1
8  UNTIL Counter = 10
```

This code works, but it is inefficient.

Suggest **three** improvements that could be made.

1.....  
.....  
2.....  
.....  
3.....  
.....[3]

(ii) Rewrite the program code with your improvements.

.....  
.....  
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.....  
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.....  
.....  
.....  
.....[3]

- 9 Four statement types and four examples are shown below.

Draw a line to connect each statement type to the correct example.

Statement type	Example
Assignment	FORX ← 1TO10
Iteration	READ X
Input	PRINT X
Output	X ← Y+Z

[3]

- 10 Identify **two** different selection statements that you can use when writing pseudocode.

.....


.....

.....

.....[2]

Mentor  
SOORAJ



- 
- [3]

[3]

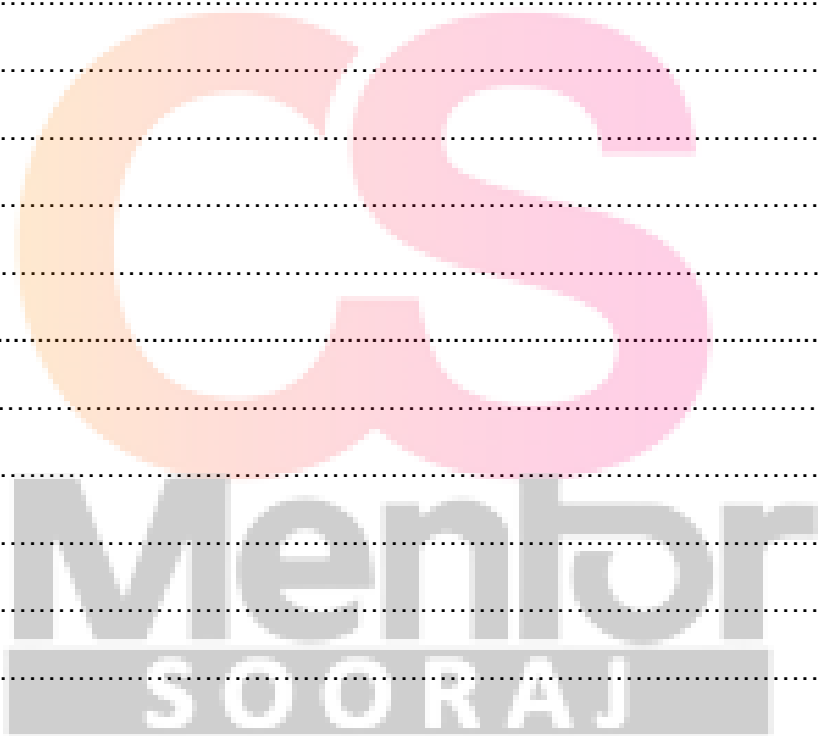
- CS  
Mentor

- Test data set 1 .....
- Reason .....
- .....
- .....

Reason .....

Page | 10





CS  
Mentor  
SOORAJ

..... [1]

[4]



- 16 **(a)** Draw a flowchart for an algorithm to input numbers. Reject any numbers that are negative and count how many numbers are positive. When the number zero is input, the process ends and the count of positive numbers is output.



- (b)** Explain the changes you will make to your algorithm to also count the negative numbers.

.....

.....

.....

.....[2]

17 An algorithm is written in pseudocode:

```
INPUT Number
IF Number > 100
    THEN OUTPUT "The number is too large"
    ELSE OUTPUT "The number is acceptable"
ENDIF
```

**(a)** Describe the purpose of the algorithm.


[2]

**(b) (i)** The algorithm only allows one attempt at inputting an acceptable value.

State how you would change the algorithm so that it continues until a suitable input is supplied.

[1]

**(ii)** Re-write the algorithm in full, using pseudocode, to implement your answer to **part (b)(i)**.



18 Describe each of the following data types used in programming. In each case, give an example of a piece of data to illustrate your answer. Each example must be different.

Char

.....

.....

.....

String

.....

.....

.....

Boolean

.....

.....

.....

[6]

19 (a) Give an example of a conditional statement using pseudocode.

.....

.....

.....

.....

[2]

(b) Describe the purpose of a conditional statement.

.....

.....

.....

.....

[2]



20 For each of the **four** groups of statements in the table, place a tick in the correct column to show whether it is an example of **Selection** or **Repetition**.

Statements	Selection	Repetition
FOR A ← 1 TO 100 B ← B+1 NEXT A		
CASE A OF 100: B ← A 200: C ← A ENDCASE		
IFA>100 THEN B ← A ENDIF		
REPEAT A ← B*10 UNTIL A > 100		

[4]

21 Identify and describe **three** loop structures that are available in pseudocode.

Loop structure 1 .....

.....

Description .....

.....

Loop structure 2 .....

.....

Description .....

.....

Loop structure 3 .....

.....

Description .....

.....

.....

[6]

22 Most programming languages include basic data types. Ahmad is describing the basic data types he has used.

State the data type that Ahmad is describing in each sentence.

Choose the data type from this list of programming terms.

<b>Array</b>	<b>Boolean</b>	<b>Char</b>	<b>Constant</b>	<b>Function</b>	<b>Integer</b>
<b>Iteration</b>	<b>Procedure</b>	<b>Real</b>	<b>String</b>	<b>Variable</b>	

A number with a fractional part that can be positive or negative and used in calculations

Data type .....

A whole number that can be positive, negative or zero and used in calculations

Data type .....

A single number, symbol or letter

Data type .....

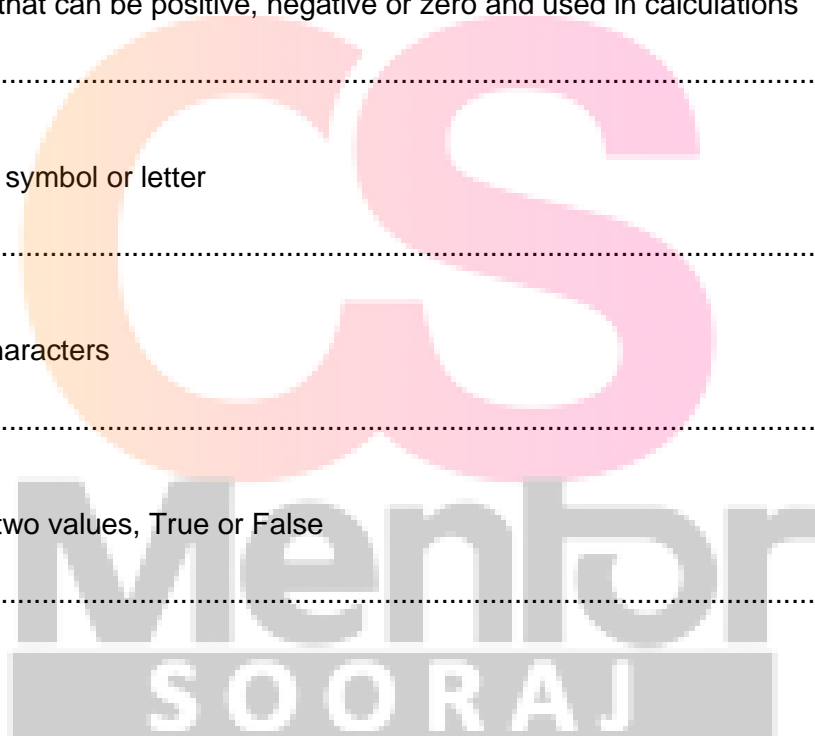
A sequence of characters

Data type .....

A data type with two values, True or False

Data type .....

[5]



23 Draw a line to connect each **Description** to the most appropriate **Pseudocode example**.

**Description**

**Pseudocode example**

A loop that will iterate  
at least once

CASE ... OF ... OTHERWISE ... ENDCASE

A loop that will not be  
executed on the first test  
if the condition is false

Number  $\leftarrow$  Number + 1

A conditional statement

WHILE ... DO ... ENDWHILE

Totalling

Sum  $\leftarrow$  Sum + NewValue

Counting

REPEAT ... UNTIL

[4]

24 Draw the flowchart symbol for **Decision** and the flowchart symbol for **Process**.

Decision	Process

[2]

