

A-Level Computer Science P2 Notes

(Visual Basic)

First Edition

Navid Saqib

(0333-4259883)

Visiting Teacher

Lahore Grammar School

Beacon House School

SISA

KIMS

ROOTS

All rights reserved. No part of this publication may be reproduced, Stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publisher.

Title A-Level Computer Science P2 Notes (Visual Basic)

Author Navid Saqib. (0333-4259883)

Published by MS Books (042-35774780)

Edition First Edition

Legal Advisor Ashir Najeeb Khan (Advocate High Court)
AKBAR LAW CHAMBERS
39-40, 1st Floor, Sadiq Plaza, The Mall, Lahore
042-36314839, 0307-4299886

For Complaints/Order **MS Books**
83-B Ghalib Market, Gulberg III Lahore
(042-35774780),(03334504507),(03334548651)

CONTENT TABLE

Ch #	Topics	Pg #
1.	Knowing Algorithm and Pseudocode	5
	Programming stage 1- setting and declaration	8
2.	StepWise Refinement/TopDown design	11
3.	Knowing structured and modular programming concept	16
4.	Programming stage 2- Input	22
5.	programming stage output	25
6.	programming stage 3 Processing	26
7.	Selection construct	34
8.	Nested if statements	52
9.	Iteration	57
10.	Validation	60
11.	1D arrays	71
12.	Finding maximum and minimum value of array	77
13.	Linear Searching	81
14.	2D array	83
15.	Built in functions	89
16.	Other Built in functions	105
17.	Randomization	106
18.	Procedures	113
19.	Functions	125
20.	Passing Array to functions	132
21.	Binary-Decimal and decimal-binarythrough procedures	134
22.	Structured chart	135
23.	Bubble sort	142
24.	File Handling	147
25.	Dealing with Records	166
26.	Software development	171
27.	software testing	176
28.	Stub testing	180
29.	Dry running and algorithm	182
PRACTICE BOOKLET		
30.	Pseudocode practice	189
31.	if/then/else/selectcase practice	204
32.	Iteration loop practice	232
33.	Iteration loop practice	241
34.	1D array practice	248
35.	2D array Practice	258
36.	Random Number Generation practice	266
37.	Procedure and Function Practice	273
38.	File reading and wiriting Practice	291

Knowing Algorithms and Pseudo codes

Algorithms:

An algorithm (pronounced AL-go-rith-um) is a procedure or formula for solving a problem.
Mostly written as English Statements

Or

An algorithm is a set of instructions designed to perform a specific task. This can be a simple process, such as multiplying two numbers, or a complex operation

Or

A set of instructions independent of any programming language that calculates a function or solves a problem

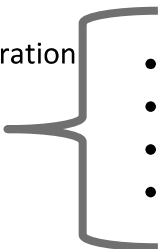
Algorithm is a sequence of steps involved to solve a problem. These steps are:

Pseudo code:

Informal high-level description of a computer program or other algorithm, intended for human reading rather than machine reading.

Pseudo code is not a programming language, but simply an informal way of describing a program. It does not require strict syntax, but instead serves as a general representation of a program's functions.

Main Steps of solving a problem/programming

- 
- Setting and declaration
 - Input
 - Process
 - Output
- Setting and declaration
 - Input
 - Calculations/constructs
 - Output

Identifier Table

- Deciding about ingredients Using IDENTIFIER(variable) TABLE

Ingredient/Equipment Name	Quantity Needed	Description
Tea	1 Tea spoon	Required for the Flavor and color
Sugar	2 Tea spoon	For sweetener
Water	1 cup	For Diluting the substance
Milk	½ cup	For enriches the taste
Kettle	1 unit	For processing
Stove	1	For processing
Cup	1 unit	For pouring tea
Saucer	1unit	For cup
Spoon	1	For presentation and mixing sugar
Teapot	1	For making tea in it

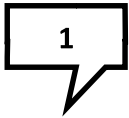
Solution to the problem step by step:

Put kettle on stove Put Water in Kettle If it is an electric kettle then Switch the kettle on Else Put it on lit gas/turn stove on End if Setup the cup and saucer Put a spoon on the saucer Get the Teapot Put the tea in teapot If you take the milk then Add the milk to the cup Endif	If you take sugar then Add the sugar to the cup End if Check while water has not boiled Wait Endwhile Add water to teapot Wait for 3 minutes to let it BRU Pour tea into the cup If there is a sugar in the cup Stir the tea End if Repeat Wait Until tea is cool enough to drink Enjoy Tea!
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

The solution given is a conceptual onenot a programming code

Difference between

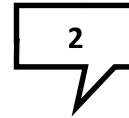
1. Algorithm (English Written Statements)
2. Pseudo code (English Written Statements but with logical expressions)
3. Programming statements (purely Programming Language command to complete a task)



Set total equal to zero



total = 0



dim total as integer = 0

Programming Stage 1: Setting and declaration

Here is a table showing all the Datatype

Type	Description	Memory Space	Example
Integer	a whole number from -2,147,483,648 through 2,147,483,647	4 bytes	37,453
Byte	a whole positive number from 0 to 255	1 byte	12
Real	Visual Basic does not use Real Numbers, instead it uses {Single} and {Double}, which both allow for decimal places	-	-
{Single}	When user require to enter data like 9.7, though range is higher but suitable for medical experiment data etc.	4 bytes	9.7
{Double}	When user need to enter a data like 99.99, it is recommended to use double as datatype for example Price etc.	8 bytes	129.97
Decimal	It support up to 18 precession level of decimal	16 bytes	77.432526
Boolean	either TRUE or FALSE Alternatively 1 or 0 Alternatively Yes or No	4 bytes (!)	TRUE
Character	A single character	2 bytes	J
String	A collection of characters	A-unicode string with a maximum length of 2,147,483,647 characters	Cabbage
Date	There are several different types of date format that you can apply. 01/01/0001 to 12/31/9999 and times from 12:00:00 AM (midnight) through 11:59:59.9999999 PM	8 bytes	08/17/1924 14:34:23

Programming Stage 1: Setting and Declaration(Assignment)

Contain two element s

Variables – (changeable values) which can change during the execution of the program
e.g

Price, quantity, total, speed, no of students

Algorithm	Pseudocode
Name ="Navid Saqib"	DECLARE Name :STRING ="Navid Saqib"
Price =0	DECLARE Price :Integer =0

Q : Create 6 Variables for a program

Constant – (static Values) which cannot change their values during the program
e.g

Value of π which is 3.142 or 22/7

Algorithm	Pseudocode
Pi=3.142	CONSTANT Pi :DECIMAL = 3.142

Q : Create 5 constant for a program by declaring its values

How to declare a variable and a constant in programming language?

Dim <variable name> as <data type>

Dim num1 as Integer =0

NAVID SAQIB