## Computing

## **Software Development**

[INTERMEDIATE 2]

**David Bethune** 



## Acknowledgement Learning and Teaching Scotland gratefully acknowledge this contribution to the National Qualifications support programme for Computing. First published 2004 © Learning and Teaching Scotland 2004 This publication may be reproduced in whole or in part for educational purposes by educational establishments in Scotland provided that no profit accrues at any stage.

ISBN 1 84399 004 0

## CONTENTS

Introducti	on			
Tutor Guide				
Stude	nt Gu	ide	2	
Section 1:	Soft	ware Development Process		
	1.1	Software	5	
	1.2	The development process	8	
	1.3	A dance in the dark every Monday	10	
	1.4	Analysis	13	
	1.5	Design	14	
	1.6	Implementation	16	
	1.7	Testing	16	
	1.8	Documentation	16	
	1.9	Evaluation	17	
	1.10	Maintenance	18	
Section 2:	Languages and Environments			
	2.1	Computer languages	21	
	2.2	High and low level languages	21	
	2.3	Translators	24	
	2.4	Interpreters	25	
	2.5	Compilers	25	
	2.6	Text editors	27	
	2.7	Scripting languages and macros	28	
Section 3:	High Level Language Programming - getting started			
	3.1	Introducing Visual BASIC	35	
	3.2	Input and output – example	38	
	3.3	Input and output - tasks	47	
	3.4	Other forms of output	48	
	3.5	Declaring variables	<b>50</b>	
	3.6	Working with numbers – example	53	
	3.7	Adding a Clear button	61	
	3.8	Arithmetical expressions	62	
	3.9	Working with numbers – tasks	63	
	3.10	Pre-defined numeric functions	64	
	3.11	Working with words and numbers – example	67	
	3.12	Pre-defined string functions	72	
	3.13	Example program using Asc and Chr\$	80	

Section 4:	High Level Language Programming - basic of	constructs
	4.1 Making choices	85
	4.2 If Then Else	86
	4.3 Multiple Ifs	89
	4.4 Using AND – example	95
	4.5 Using AND – task	100
	4.6 Complex conditions	101
	4.7 Repetition	102
	4.8 Repetition using For Next	103
	4.9 Counting using For Next	107
	4.10 For Next tasks	115
	4.11 Using the loop counter	116
	4.12 Do Loop Until	119
	4.13 Random numbers	121
	4.14 Arithmetic tester	124
	4.15 More examples using Do Loop Until	127
	4.16 Other forms of conditional loop	132
Section 5:	Standard Algorithms and Arrays	
	5.1 Input validation	135
	5.2 Input validation tasks	139
	5.3 Other standard algorithms	140
	5.4 Using arrays	143
	5.5 Examples using arrays	149
Answers to	Questions	153