

Year 9 Digital Technologies: Introduction to General Purpose Programming (Visual BASIC)

Achievement Standard: By the end of Year 10, students explain the control and management of networked digital systems and the security implications of the interaction between hardware, software and users. They explain simple data compression, and why content data are separated from presentation.

Students plan and manage digital projects using an iterative approach. They define and decompose complex problems in terms of functional and non-functional requirements. Students design and evaluate user experiences and algorithms. They design and implement modular programs, including an object-oriented program, **using algorithms and data structures involving modular functions** that reflect the relationships of real-world data and data entities. They take account of privacy and security requirements when selecting and validating data. **Students test and predict results and implement digital solutions.** They evaluate information systems and their solutions in terms of risk, sustainability and potential for innovation and enterprise. They share and collaborate online, establishing protocols for the use, transmission and maintenance of data and projects.

Unit Specific Information: [various forms e.g. assessment focus, context, etc]

Students will learn the concepts of algorithms and programming in a general programming language and builds on the general programming language concepts. Students will then use this knowledge to complete an exam covering these concepts.

In this unit, students will study to the basic constructs of programming (algorithm, sequence, selection, iteration and function). Using the Visual BASIC program, they will use tutorials to learn, understand and consolidate knowledge and skills inside this program.

Guiding Questions:

Why is programming important in Digital Technology?

What is an iterative approach to project management?

- What is a modular program?
- What evidence do you need to show you have planned and tested a digital project?
- How can you show your thinking when evaluating a project against criteria?

Assessment Details:

Summative Task:

Students will complete an exam using MS Visual BASIC skills especially the coding, analysis of the given requirements, designing, implementing (including testing) of the solution.

Conditions:

In class
Supervised
2 Lessons
On Computers

READING / VIEWING / LISTENING:

Core Text 1: OneNote tutorials

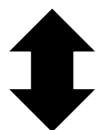
COMPREHENSION SKILL FOCUS:

Determining Importance



THINKING:

Decompose
Design
Implement
Evaluate



EXAM

In Class Exam featuring VB programming code

HIGHLY VALUED LANGUAGE FEATURE FOCUS:

Elaborating clauses

Priority Standards (Proficiency Scale – level 2/3)

	Knowledge & Understanding	Processes & Production Skills
3	I can understand and implement basic programming constructs.	I can plan and manage digital projects. I can design and implement modular programs using algorithms.
2	Recognise or describe key vocabulary and concepts: <ul style="list-style-type: none"> • Algorithm • Sequence • Selection • Iteration • Function 	Recognise and apply key vocabulary and concepts: <ul style="list-style-type: none"> • Functional requirements • Non-functional requirements • Iterative approach • Modular programs Perform basic processes such as: <ul style="list-style-type: none"> - Define and decompose complex problems (using functional/non-functional requirements) - Design and implement modular programs - Create algorithms to solve problems - Test and predict results - Implement digital solutions

Learning Goals:

Strands and Sub-Strands	Australian Curriculum Content Descriptors	Kirwan High Learning Goals
Processes & Production Skills	<ul style="list-style-type: none">Define and decompose real-world problems precisely, taking into account functional and non-functional requirements and including interviewing stakeholders to identify needs	<ul style="list-style-type: none">Students will be able to create an analysis documentStudents will be able to create a solution specification document
	<ul style="list-style-type: none">Design the user experience of a digital system by evaluating alternative designs against criteria including functionality, accessibility, usability, and aesthetics	<ul style="list-style-type: none">Students will be able to design the user interfaces for their projectStudents will be able to consider alternative designsStudents will be able to evaluate designs against the criteria of functionality, accessibility, usability, and aestheticsStudents will be able to develop a algorithms
	<ul style="list-style-type: none">Design algorithms represented diagrammatically and in structured English and validate algorithms and programs through tracing and test cases	<ul style="list-style-type: none">Students will be able to use variables and arraysStudents will be able to use sequence, selection, iteration and functionsStudents will be able to create a test plan to counter any risks of bugs and hacking
	<ul style="list-style-type: none">Implement modular programs, applying selected algorithms and data structures including using an object-oriented programming language	<ul style="list-style-type: none">Students will be able to carry out and document their test planStudents will be able to evaluate their product and the process and make future recommendations

Possible Habit of Mind:

<p>Exploring Meaning of the HOM By the end of this unit students will be able to:</p>	<p>Expanding Capacity for using the HOM By the end of this unit students will be able to:</p>	<p>Increasing Alertness for the HOM By the end of this unit students will be able to:</p>	<p>Extending Values of the HOM By the end of this unit students will be able to:</p>	<p>Building Commitment towards the HOM By the end of this unit students will be able to:</p>
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General Capabilities: This unit provides opportunities for students to engage in following capabilities:

<p>Literacy</p> <ul style="list-style-type: none"> <input type="checkbox"/> Comprehending texts through listening, reading and viewing <input type="checkbox"/> Composing texts through speaking, writing and creating <input type="checkbox"/> Text knowledge <input type="checkbox"/> Grammar knowledge <input type="checkbox"/> Word knowledge <input type="checkbox"/> Visual knowledge <p>Numeracy</p> <ul style="list-style-type: none"> <input type="checkbox"/> Estimating and calculating with whole numbers <input type="checkbox"/> Recognising and using patterns and relationships <input type="checkbox"/> Using fractions, decimals, percentages, ratios and rates <input type="checkbox"/> Using spatial reasoning <input type="checkbox"/> Interpreting statistical information <input type="checkbox"/> Using measurement 	<p>ICT</p> <ul style="list-style-type: none"> <input type="checkbox"/> Applying social and ethical protocols and practices when using ICT <input type="checkbox"/> Investigating with ICT <input type="checkbox"/> Creating with ICT <input type="checkbox"/> Communicating with ICT <input type="checkbox"/> Managing and operating ICT <p>Critical and creative thinking</p> <ul style="list-style-type: none"> <input type="checkbox"/> Inquiring - identifying, exploring and organising information and ideas <input type="checkbox"/> Generating ideas, possibilities and actions <input type="checkbox"/> Reflecting on thinking and processes <input type="checkbox"/> Analysing, synthesising and evaluating reasoning and procedures 	<p>Personal and social capability</p> <ul style="list-style-type: none"> <input type="checkbox"/> Self-awareness <input type="checkbox"/> Self-management <input type="checkbox"/> Social awareness <input type="checkbox"/> Social management <p>Ethical understanding</p> <ul style="list-style-type: none"> <input type="checkbox"/> Understanding ethical concepts and issues <input type="checkbox"/> Reasoning in decision making and actions <input type="checkbox"/> Exploring values, rights and responsibilities <p>Intercultural understanding</p> <ul style="list-style-type: none"> <input type="checkbox"/> Recognising culture and developing respect <input type="checkbox"/> Interacting and empathising with others <input type="checkbox"/> Reflecting on intercultural experiences and taking responsibility
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Cross Curriculum Priorities:

<ul style="list-style-type: none"> <input type="checkbox"/> Aboriginal and Torres Strait Islander histories and cultures 	<ul style="list-style-type: none"> <input type="checkbox"/> Asia and Australia's engagement with Asia 	<ul style="list-style-type: none"> <input type="checkbox"/> Sustainability
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Differentiation [for small groups or individuals]:

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