Everett Public Schools Framework: Computer Programming I (Visual Basic)

CIP Code: 110201	**Total Framework Hours:** 90 Hours
Course: Computer Programming	**Type:** Preparatory
Career Cluster: Information Technology	**Date Last Modified:** Tuesday, June 01, 2010

Resources and Standard used in Framework Development:
Standards used in this framework come from recommended model framework from OSPI.

Unit 1 CAREERS IN COMPUTER PROGRAMMING — Hours: 5

Performance Assessment(s)

Formative Activity - UW - CSE - video interviews, Jobs Outlook powerpoint
Summative - Students research answers to the essential questions and prepare a poster / digital presentation explaining a career that they are interested responding to the questions in light of their career choice.

Summative - Students read the Microsoft white paper, complete a tutorial on Safety and then complete a quiz.

Industry Standards and Competencies

C-1 Develop employability skills to secure and keep employment in chosen field
- 1.1 Evaluate industries, organizations, and careers based on multiple sources of research and information
- 1.2 Assess interest areas to determine potential career pathways, including career ladders

C-2 Communicate in multiple modes to address needs within the career and technical field
- 2.1 Apply strategies to enhance effectiveness of all types of communications in the workplace
- 2.2 Apply reading skills and strategies to work-related documents
- 2.3 Locate information from books, journals, magazines, and the Internet
- 2.7 Use writing/publishing/presentation applications
- 2.8 Apply basic skills for work-related oral communication

C-5 Define health and safety regulations
- 5.1 Identify and apply OSHA and other health and safety regulations that apply to specific tasks and jobs in the occupational area
- 5.7 Create a systematic safety program which would achieve OSHA compliance and promote a safe working environment

EALRs AND GLEs Taught and Assessed in the Standards

Arts

Communications

Communication 1.1: Uses listening and observation skills and strategies to focus attention and interpret information.
Communication 2.1: Uses language to interact effectively and responsibly in a multicultural context.
2.1.1 Analyzes the needs of the audience, situation, and setting to adjust language and other communication strategies.
Communication 3.1: Uses knowledge of topic/theme, audience, and purpose to plan presentations.
3.1.1 Applies skills to plan and organize effective oral communication and presentation.
Communication 3.2: Uses media and other resources to support presentations.
3.2.1 Proficiency in this GLE is expected at grade 7.
Communication 3.3: Uses effective delivery.
3.3.1 Applies skills and strategies for the delivery of effective oral communication and presentations.

Health and Fitness

Health 2.4: Acquires skills to live safely and reduce health risks.

2.4.1 Understands types of abuse and risky situations and how to respond appropriately and safely.

Health 3.1: Understands how family, culture, and environmental factors affect personal health.

3.1.2 Analyzes how environmental factors impact health.

Mathematics

Reading

Science

Social Studies

Writing

Other Skills

Leadership Skills

Leadership 1.0 Individual Skills

1.1 The student will analyze, refine, and apply decision-making skills through classroom, family, community, and business and industry (work related) experiences.

1.2 The student will identify and analyze the characteristics of family, community, business, and industry leaders.

1.4 The student will be involved in activities that require applying theory, problem-solving, and using critical and creative thinking skills while understanding outcomes of related decisions.

Leadership 1.0 Individual Skills

2.2 The student will demonstrate knowledge of conflict resolution and challenge management.

Leadership 3.0 Community and Career Skills

3.1 The student will analyze the roles and responsibilities of citizenship.

3.2 The student will demonstrate social responsibility in family, community, and business and industry.

3.3 The student will understand their role, participate in and evaluate community service and service learning activities.

3.4 The student will understand the organizational skills necessary to be a successful leader and citizen and practices those skills in real-life.

Employability Skills

SCANS 1.0 The student identifies, organizes, plans and allocates resources

Analytical, Logical, and Creative Thinking Skills				
☑ Observe	☐ Cause/Effect	☑ Finding Evidence	☑ Reasoning	☐ Originality
☑ Patterns	☐ Fact/Opinion	☐ Evaluation	☐ Problem Solving	☐ Risking
☐ Sequence	☐ Main Idea	☐ Detect Bias	☐ Goal Setting	☑ Inquisitiveness
☑ Classify	☐ Summary	☐ Inference	☐ Fluency	☐ Attending
☐ Compare/Constrast	☐ Point of View	☐ Conclusion	☐ Elaboration	☐ Persistence
☑ Predict	☑ Analysis	☐ Metacognition	☐ Flexibility	☐ Precision

Relevance to Work

Awareness of how to operate safely without injury in the workplace
Awareness of career options and their requirements

Unit 2 INTRODUCTION TO COMPUTERS, PROGRAMMING AND VB ENVIRONMENT | Hours: 10

Performance Assessment(s)

Formative -- History of Computing Timeline
Formative -- Cornell notes on the different programming languages and their applications / uses.
Fomative -- Counting in the Binary Number System, Decoding / Encoding Exercise, number conversions between Binary, Decimal, Hex.
Summative - Written test.

Industry Standards and Competencies

C-2 Communicate in multiple modes to address needs within the career and technical field

- 2.4 Apply basic writing skills to work-related communication
- 2.5 Write work-related materials
- 2.7 Use writing/publishing/presentation applications

C-4 Demonstrate positive work behaviors

- 4.3 Demonstrate willingness to learn and further develop skills
- 4.4 Demonstrate self-management skills

C-9 Apply Problem Solving and Troubleshooting Basics

- 9.3 Determine and discuss possible solutions to a problem

C-10 Explain programming concepts

- 10.1 Define what a computer program is
- 10.2 Define how a computer program runs
- 10.3 Identify the applications appropriate for each programming language
- 10.6 Differentiate between procedural and object oriented programming

C-14 Explain fundamental programming theory

- 14.1 Describe the relationship between hardware and software
- 14.2 Analyze programming languages for uses, structure, and environment
- 14.3 Classify the various programming languages by communication level
- 14.5 List the stages of program development

EALRs AND GLEs Taught and Assessed in the Standards

Arts

Communications

Health and Fitness

Mathematics

Algebra 1.2 Core Content: Numbers, expressions, and operations

1.2.A Know the relationship between real numbers and the number line, and compare and order real numbers with and without the number line.

Reading

Science

Social Studies

History 4.1: Understands historical chronology.

4.1.1 (9-10) Analyzes change and continuity within a historical time period.

History 4.2: Understands and analyzes causal factors that have shaped major events in history.

4.2.3 (12) Evaluates the ethics of current and future uses of technology based on how technology has shaped history.

Writing

Writing 3.1: Develops ideas and organizes writing.

3.1.1 Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples.

3.1.2 Analyzes and selects effective organizational structure.

Other Skills

Leadership Skills

Leadership 1.0 Individual Skills

1.1 The student will analyze, refine, and apply decision-making skills through classroom, family, community, and business and industry (work related) experiences.

Employability Skills

SCANS 1.0 The student identifies, organizes, plans and allocates resources

SCANS 3.0 The student acquires and uses information

3.1: Acquires and evaluates information

3.2: Organizes and maintains information

3.3: Interprets and communicates information

SCANS 4.0 The student understands complex systems and inter-relationships

4.1: Understands Systems - Knows how social, organizational, and technological systems work and operates effectively with them.

Analytical, Logical, and Creative Thinking Skills

☐ Observe	☐ Cause/Effect	☐ Finding Evidence	☑ Reasoning	☐ Originality
☐ Patterns	☐ Fact/Opinion	☐ Evaluation	☑ Problem Solving	☐ Risking
☑ Sequence	☐ Main Idea	☐ Detect Bias	☐ Goal Setting	☐ Inquisitiveness
☑ Classify	☐ Summary	☐ Inference	☑ Fluency	☐ Attending
☐ Compare/Constrast	☐ Point of View	☐ Conclusion	☐ Elaboration	☐ Persistence
☐ Predict	☑ Analysis	☐ Metacognition	☐ Flexibility	☑ Precision

Relevance to Work

Technical Writing and communication skills

Unit 3 GUI - INTERFACE DESIGN, PROGRAMMING PROCESS | Hours: 10

Performance Assessment(s)

Formative -- Hello World
Formative -- Calculator GUI
Summative -- Feelings project

Industry Standards and Competencies

C-12 Demonstrate project management skills
- 12.15 Formulate a task strategy
- 12.16 Prioritize tasks according to customer needs
- 12.17 Devise plan of action
- 12.18 Identify means of managing change

C-13 Prepare and present documentation
- 13.1 Prepare a technical documentation report that is clear, concise, accurate, complete, appropriate, and grammatically correct
- 13.2 Describe the contents, characteristics and the purpose of network documentation, user documentation, troubleshooting logs, and maintenance logs

C-14 Explain fundamental programming theory
- 14.9 Design program logic using pseudocode techniques

C-15 Plan programs
- 15.1 Develop a problem statement
- 15.2 Define the assumptions that define the scope of the problem
- 15.3 List strategies used to gather known information
- 15.4 Apply known information to the problem statement
- 15.5 Hypothesize expected output

C-16 Develop programs (16.1 - 16.19)
- 16.1 Develop programs using desired language

C-16 Develop programs (16.20 - 16.34)
- 16.22 Define and apply built in functions
- 16.23 Create user defined functions
- 16.24 Apply language specific programming techniques
- 16.25 Test and run a program for desired output
- 16.26 Explain and apply methods used to debug a program
- 16.27 Utilize reference materials for problem solving
- 16.28 Generate executable code
- 16.29 Provide internal documentation
- 16.30 Explain the importance of versioning and source code control
- 16.32 Annotate program and design and revision
- 16.34 Explain and apply methods used to maintain application/program

C-17 Implement and manage software
- 17.4 Plan and write end user documentation
- 17.5 List and apply methods used to troubleshoot compatibility issues of hardware and software

C-18 Test and follow a Quality Assurance Process
- 18.1 Create a testing plan
- 18.2 Implement a testing plan

18.3 Demonstrate ability to provide feedback to the development process

EALRs AND GLEs Taught and Assessed in the Standards

Arts

- Analyzes the use and organization of elements, principles, foundations, skills and techniques.

3.1 Uses the arts to express and present ideas and feelings.

3.2 Uses the arts to communicate for a specific purpose.

Communications

1.2.1 Evaluates effectiveness of and creates a personal response to visual and auditory information.

3.1.1 Applies skills to plan and organize effective oral communication and presentation.

Health and Fitness

Mathematics

1.1.B Solve problems that can be represented by linear functions, equations, and inequalities.

1.1.E Solve problems that can be represented by exponential functions and equations.

Algebra 1.2 Core Content: Numbers, expressions, and operations

1.2.B Recognize the multiple uses of variables, determine all possible values of variables that satisfy prescribed conditions, and evaluate algebraic expressions that involve variables.

1.2.C Interpret and use integer exponents and square and cube roots, and apply the laws and properties of exponents to simplify and evaluate exponential expressions.

Algebra 1.4 Core Content: Linear functions, equations, and inequalities

1.4.A Write and solve linear equations and inequalities in one variable

Algebra 1.8 Core Processes: Reasoning, problem solving, and communication

1.8.A Analyze a problem situation and represent it mathematically.

1.8.B Select and apply strategies to solve problems.

1.8.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.

Reading

Science

Social Studies

Writing

Other Skills

Leadership Skills

Leadership 1.0 Individual Skills

Leadership 1.0 Individual Skills

Employability Skills

SCANS 1.0 The student identifies, organizes, plans and allocates resources

1.1: Time - Selects goal-relevant activities, ranks them, allocates time, and prepares and follows schedules.

SCANS 2.0 The student demonstrates interpersonal skills in working well with others.

2.3: Serves clients/customers

SCANS 3.0 The student acquires and uses information

3.3: Interprets and communicates information

3.4: Uses computers to process information

SCANS 4.0 The student understands complex systems and inter-relationships

4.1: Understands Systems - Knows how social, organizational, and technological systems work and operates effectively with them.

4.2: Monitors and Corrects Performance - Distinguishes trends, predicts impacts on system operations, diagnoses deviations in performance and makes corrections.

SCANS 5.0 The student works with a variety of technologies

5.1: Selects Technology - Chooses procedures, tools or equipment including computers and related technologies.

5.2: Applies Technology to Task - Understands overall intent and proper procedures for setup and operation of equipment.

5.3: Maintains and Troubleshoots Equipment - Prevents, identifies, or solves problems with equipment, including computers and other technologies.

Analytical, Logical, and Creative Thinking Skills

☑ Observe	☑ Cause/Effect	☐ Finding Evidence	☑ Reasoning	☐ Originality
☐ Patterns	☑ Fact/Opinion	☑ Evaluation	☑ Problem Solving	☑ Risking
☐ Sequence	☑ Main Idea	☐ Detect Bias	☐ Goal Setting	☐ Inquisitiveness
☑ Classify	☐ Summary	☑ Inference	☑ Fluency	☐ Attending
☐ Compare/Constrast	☐ Point of View	☑ Conclusion	☐ Elaboration	☐ Persistence
☐ Predict	☑ Analysis	☑ Metacognition	☐ Flexibility	☑ Precision

Relevance to Work

Algorithim development given a specified project requirement
Communication of the programmers logic process applied in the code.

Unit 4 VARIABLE TYPES, ARITHMETIC EXPRESSIONS AND ASSIGNMENT STATEMENTS | Hours: 10

Performance Assessment(s)

Formative - Inventory app
Formative - Favorite colors drop down list app
Formative - Simple Calculator app
Formative - cell phone app
Formative - Temperature Conversion app
Formative - Spirit Shop
Summative - Geometry Areas for - Triangles,

Industry Standards and Competencies

C-3 Solve problems using critical thinking
- 3.1 Demonstrate skills used to define and analyze a given problem
- 3.2 Explain the importance and dynamics of individual and teamwork approaches of problem solving
- 3.3 Describe methods of researching and validating reliable information relevant to the problem
- 3.5 Select potential solutions based on reasoned criteria
- 3.6 Implement and evaluate solution(s)

C-9 Apply Problem Solving and Troubleshooting Basics
- 9.1 Define and document a problem
- 9.2 Define possible causes of a problem
- 9.3 Determine and discuss possible solutions to a problem
- 9.4 Explain and perform basic troubleshooting and maintenance tasks

C-10 Explain programming concepts
- 10.3 Identify the applications appropriate for each programming language
- 10.4 Define functions/methods/procedures

C-12 Demonstrate project management skills
- 12.4 Develop work breakdown structures
- 12.5 Evaluate project requirements
- 12.8 Develop initial project management flow chart
- 12.9 Identify interdependencies within a project management plan
- 12.15 Formulate a task strategy
- 12.16 Prioritize tasks according to customer needs
- 12.17 Devise plan of action
- 12.18 Identify means of managing change

C-13 Prepare and present documentation
- 13.1 Prepare a technical documentation report that is clear, concise, accurate, complete, appropriate, and grammatically correct
- 13.2 Describe the contents, characteristics and the purpose of network documentation, user documentation, troubleshooting logs, and maintenance logs

C-16 Develop programs (16.1 - 16.19)
- 16.1 Develop programs using desired language
- 16.2 Develop programs that use arithmetic operations
- 16.3 Develop programs that use relational operators
- 16.4 Explain and apply the use of logical operators
- 16.5 Explain and apply compound conditions
- 16.7 Explain and apply methods of calculating subtotals and final totals

C-16 Develop programs (16.20 - 16.34)

16.28 Generate executable code

16.29 Provide internal documentation

16.30 Explain the importance of versioning and source code control

16.31 Compare and contrast revision control and version control

16.32 Annotate program and design and revision

C-17 Implement and manage software

17.1 Demonstrate ability to work on a software development team

17.2 Identify sources and techniques used to gather information needed for implementation

17.3 Explain and demonstrate a program's use/function

17.4 Plan and write end user documentation

C-18 Test and follow a Quality Assurance Process

18.1 Create a testing plan

18.2 Implement a testing plan

18.3 Demonstrate ability to provide feedback to the development process

EALRs AND GLEs Taught and Assessed in the Standards

Arts

Arts 3.0 The student communicates through the arts.

3.2 Uses the arts to communicate for a specific purpose.

Communications

Health and Fitness

Mathematics

Algebra 1.1 Core Content: Solving Problems

1.1.A Select and justify functions and equations to model and solve problems.

1.1.E Solve problems that can be represented by exponential functions and equations.

Algebra 1.2 Core Content: Numbers, expressions, and operations

1.2.B Recognize the multiple uses of variables, determine all possible values of variables that satisfy prescribed conditions, and evaluate algebraic expressions that involve variables.

1.2.C Interpret and use integer exponents and square and cube roots, and apply the laws and properties of exponents to simplify and evaluate exponential expressions.

Algebra 1.3 Core Content: Characteristics and behaviors of functions

1.3.B Represent a function with a symbolic expression, as a graph, in a table, and using words, and make connections among these representations.

Algebra 1.4 Core Content: Linear functions, equations, and inequalities

1.4.A Write and solve linear equations and inequalities in one variable

Algebra 1.8 Core Processes: Reasoning, problem solving, and communication

1.8.A Analyze a problem situation and represent it mathematically.

1.8.B Select and apply strategies to solve problems.

1.8.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.

1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class or related problems to solve specific problems.

1.8.F Summarize mathematical ideas with precision and efficiency for a given audience and purpose.

Geometry 1 Core Content: Logical arguments and proofs

1.C Use deductive reasoning to prove that a valid geometric statement is true.

6.C Apply formulas for surface area and volume of three-dimensional figures to solve problems.

Reading

Science

Social Studies

Writing

Other Skills

Leadership Skills

Leadership 1.0 Individual Skills

1.1 The student will analyze, refine, and apply decision-making skills through classroom, family, community, and business and industry (work related) experiences.

1.4 The student will be involved in activities that require applying theory, problem-solving, and using critical and creative thinking skills while understanding outcomes of related decisions.

Employability Skills

SCANS 1.0 The student identifies, organizes, plans and allocates resources

1.1: Time - Selects goal-relevant activities, ranks them, allocates time, and prepares and follows schedules.

1.3: Materials and facilities - Acquires, stores, allocates, and uses materials or space efficiently.

SCANS 2.0 The student demonstrates interpersonal skills in working well with others.

2.3: Serves clients/customers

SCANS 3.0 The student acquires and uses information

3.1: Acquires and evaluates information

3.2: Organizes and maintains information

3.3: Interprets and communicates information

3.4: Uses computers to process information

SCANS 4.0 The student understands complex systems and inter-relationships

4.3: Improves or Designs Systems - Suggests modifications to existing systems and develops new or alternative systems to improve performance.

SCANS 5.0 The student works with a variety of technologies

5.1: Selects Technology - Chooses procedures, tools or equipment including computers and related technologies.

5.2: Applies Technology to Task - Understands overall intent and proper procedures for setup and operation of equipment.

Analytical, Logical, and Creative Thinking Skills

☐ Observe	☐ Cause/Effect	☐ Finding Evidence	☑ Reasoning	☐ Originality
☐ Patterns	☐ Fact/Opinion	☑ Evaluation	☑ Problem Solving	☐ Risking
☐ Sequence	☐ Main Idea	☐ Detect Bias	☐ Goal Setting	☐ Inquisitiveness
☑ Classify	☐ Summary	☐ Inference	☐ Fluency	☐ Attending
☐ Compare/Constrast	☐ Point of View	☑ Conclusion	☐ Elaboration	☐ Persistence
☑ Predict	☑ Analysis	☑ Metacognition	☐ Flexibility	☑ Precision

Relevance to Work

Project planning process - pre planning - implementation - refinement of project documents

Unit 5 INTRODUCTION TO DECISION STATEMENTS AND SELECT CASE | Hours: 10

Performance Assessment(s)

Formative - Shipping Charges , students will input a containers weight and select a region for it to be shipped and the correct charges will be output.
Formative - Students will input their birth day and an age that they want to find out the year they will turn that age.
Summative - Membership Fee Calculator - students will select a gym membership type [adult, student, senior, child], optional lessons [eg karate, yoga, personal trainer], the length of a membership and the program will calculate the monthy charges due as well as the total cost of the contract.

Industry Standards and Competencies

C-3 Solve problems using critical thinking

- 3.1 Demonstrate skills used to define and analyze a given problem
- 3.2 Explain the importance and dynamics of individual and teamwork approaches of problem solving
- 3.3 Describe methods of researching and validating reliable information relevant to the problem
- 3.4 Explain strategies used to formulate ideas, proposals and solutions to problems
- 3.5 Select potential solutions based on reasoned criteria
- 3.6 Implement and evaluate solution(s)

C-9 Apply Problem Solving and Troubleshooting Basics

- 9.1 Define and document a problem
- 9.2 Define possible causes of a problem
- 9.3 Determine and discuss possible solutions to a problem
- 9.4 Explain and perform basic troubleshooting and maintenance tasks

C-10 Explain programming concepts

- 10.1 Define what a computer program is
- 10.2 Define how a computer program runs
- 10.3 Identify the applications appropriate for each programming language
- 10.4 Define functions/methods/procedures
- 10.5 Define programming structures
- 10.6 Differentiate between procedural and object oriented programming

C-12 Demonstrate project management skills

- 12.14 Develop method of evaluation
- 12.15 Formulate a task strategy
- 12.17 Devise plan of action

C-13 Prepare and present documentation

- 13.1 Prepare a technical documentation report that is clear, concise, accurate, complete, appropriate, and grammatically correct
- 13.2 Describe the contents, characteristics and the purpose of network documentation, user documentation, troubleshooting logs, and maintenance logs

C-15 Plan programs

- 15.1 Develop a problem statement
- 15.2 Define the assumptions that define the scope of the problem
- 15.3 List strategies used to gather known information
- 15.4 Apply known information to the problem statement
- 15.5 Hypothesize expected output

C-16 Develop programs (16.1 - 16.19)

- 16.1 Develop programs using desired language
- 16.2 Develop programs that use arithmetic operations

16.3 Develop programs that use relational operators
16.4 Explain and apply the use of logical operators
16.5 Explain and apply compound conditions
16.6 Explain and apply control breaks
16.7 Explain and apply methods of calculating subtotals and final totals

C-17 Implement and manage software

17.2 Identify sources and techniques used to gather information needed for implementation
17.3 Explain and demonstrate a program's use/function
17.4 Plan and write end user documentation
17.5 List and apply methods used to troubleshoot compatibility issues of hardware and software
17.7 Document installation and configuration procedures

C-18 Test and follow a Quality Assurance Process

18.1 Create a testing plan
18.2 Implement a testing plan

EALRs AND GLEs Taught and Assessed in the Standards

Arts

Communications

Health and Fitness

Mathematics

Algebra 1.1 Core Content: Solving Problems

1.1.A Select and justify functions and equations to model and solve problems.
1.1.B Solve problems that can be represented by linear functions, equations, and inequalities.
1.2.B Recognize the multiple uses of variables, determine all possible values of variables that satisfy prescribed conditions, and evaluate algebraic expressions that involve variables.
1.2.C Interpret and use integer exponents and square and cube roots, and apply the laws and properties of exponents to simplify and evaluate exponential expressions.

Algebra 1.3 Core Content: Characteristics and behaviors of functions

1.3.B Represent a function with a symbolic expression, as a graph, in a table, and using words, and make connections among these representations.

Algebra 1.4 Core Content: Linear functions, equations, and inequalities

1.4.A Write and solve linear equations and inequalities in one variable

Algebra 1.8 Core Processes: Reasoning, problem solving, and communication

1.8.A Analyze a problem situation and represent it mathematically.
1.8.B Select and apply strategies to solve problems.
1.8.F Summarize mathematical ideas with precision and efficiency for a given audience and purpose.
1.8.G Synthesize information to draw conclusions, and evaluate the arguments and conclusions of others.

1.C Use deductive reasoning to prove that a valid geometric statement is true.
1.E Identify errors or gaps in a mathematical argument and develop counterexamples to refute invalid statements about geometric relationships.

Geometry 7 Core Processes: Reasoning, problem solving, and communication

7.A Analyze a problem situation and represent it mathematically
7.B Select and apply strategies to solve problems.
7.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.

7.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve specific problems.

Reading

Science

Social Studies

Writing

Writing 2.2: Writes for different purposes.

2.2.1 Demonstrates understanding of different purposes for writing.

Writing 2.3: Writes in a variety of forms/genres.

2.3.1 Uses a variety of forms/genres.

Writing 3.3: Knows and applies writing conventions appropriate for the grade level.

Other Skills

Leadership Skills

Leadership 1.0 Individual Skills

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Employability Skills

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3.1: Acquires and evaluates information

3.2: Organizes and maintains information

3.3: Interprets and communicates information

3.4: Uses computers to process information

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4.2: Monitors and Corrects Performance - Distinguishes trends, predicts impacts on system operations, diagnoses deviations in performance and makes corrections.

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Analytical, Logical, and Creative Thinking Skills				
☐ Observe	☑ Cause/Effect	☐ Finding Evidence	☑ Reasoning	☑ Originality
☑ Patterns	☐ Fact/Opinion	☑ Evaluation	☑ Problem Solving	☐ Risking
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☐ Compare/Constrast	☐ Point of View	☑ Conclusion	☐ Elaboration	☐ Persistence
☑ Predict	☑ Analysis	☑ Metacognition	☐ Flexibility	☑ Precision

Relevance to Work
Project planning process - pre planning - implementation - refinement of project documents

Unit 6 LOOPING STRUCTURES - DO WHILE AND LOOP UNTIL AND ADVANCED INPUT | Hours: 15

Performance Assessment(s)

Summative - Grade Book Program, user has the ability to enter quiz scores and a sentinal value then the quiz average and letter grade are output. Focus transfer to the display grade button is included.
Formative - Guess My Number - a random number is generated and the user plays a guessing game, feed back is given to the user based on if the guess is too high, too low. When the user guesses the hidden number stats are displayed as to the number of guesses it took them to answer, per game. Player has a choice of max and min values for the ranges as well as the choice to keep playing after they win.

Industry Standards and Competencies

C-3 Solve problems using critical thinking
- 3.1 Demonstrate skills used to define and analyze a given problem
- 3.5 Select potential solutions based on reasoned criteria
- 3.6 Implement and evaluate solution(s)

C-9 Apply Problem Solving and Troubleshooting Basics
- 9.1 Define and document a problem
- 9.2 Define possible causes of a problem
- 9.3 Determine and discuss possible solutions to a problem
- 9.4 Explain and perform basic troubleshooting and maintenance tasks

C-10 Explain programming concepts
- 10.4 Define functions/methods/procedures
- 10.5 Define programming structures

C-12 Demonstrate project management skills
- 12.14 Develop method of evaluation
- 12.15 Formulate a task strategy
- 12.16 Prioritize tasks according to customer needs

C-13 Prepare and present documentation
- 13.1 Prepare a technical documentation report that is clear, concise, accurate, complete, appropriate, and grammatically correct
- 13.2 Describe the contents, characteristics and the purpose of network documentation, user documentation, troubleshooting logs, and maintenance logs

C-15 Plan programs
- 15.1 Develop a problem statement
- 15.2 Define the assumptions that define the scope of the problem
- 15.3 List strategies used to gather known information
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- 16.1 Develop programs using desired language
- 16.2 Develop programs that use arithmetic operations
- 16.3 Develop programs that use relational operators
- 16.4 Explain and apply the use of logical operators
- 16.5 Explain and apply compound conditions
- 16.6 Explain and apply control breaks
- 16.7 Explain and apply methods of calculating subtotals and final totals
- 16.8 Explain and apply iterative and conditional loops

16.9 Describe common development environments

C-17 Implement and manage software

17.1 Demonstrate ability to work on a software development team
17.2 Identify sources and techniques used to gather information needed for implementation
17.3 Explain and demonstrate a program's use/function
17.4 Plan and write end user documentation
17.5 List and apply methods used to troubleshoot compatibility issues of hardware and software
17.6 Disable/uninstall software that may interfere with installation of a program
17.7 Document installation and configuration procedures
17.8 Explain and demonstrate methods to verify software/program installation and operation
17.9 Identify the issues of security in programming and software implementation

C-18 Test and follow a Quality Assurance Process

18.1 Create a testing plan
18.2 Implement a testing plan
18.3 Demonstrate ability to provide feedback to the development process

EALRs AND GLEs Taught and Assessed in the Standards

Arts

- Presents work to others in a performance, exhibition, and/or production.

3.2 Uses the arts to communicate for a specific purpose.

Communications

Health and Fitness

Mathematics

Algebra 1.1 Core Content: Solving Problems

1.1.A Select and justify functions and equations to model and solve problems.

Algebra 1.2 Core Content: Numbers, expressions, and operations

1.2.B Recognize the multiple uses of variables, determine all possible values of variables that satisfy prescribed conditions, and evaluate algebraic expressions that involve variables.

1.2.C Interpret and use integer exponents and square and cube roots, and apply the laws and properties of exponents to simplify and evaluate exponential expressions.

Algebra 1.3 Core Content: Characteristics and behaviors of functions

Algebra 1.6 Core Content: Data and Distributions

1.6.A Use and evaluate the accuracy of summary statistics to describe and compare data sets.

1.6.B Make valid inferences and draw conclusions based on data.

Algebra 1.8 Core Processes: Reasoning, problem solving, and communication

1.8.A Analyze a problem situation and represent it mathematically.

1.8.B Select and apply strategies to solve problems.

1.8.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.

1.8.G Synthesize information to draw conclusions, and evaluate the arguments and conclusions of others.

Geometry 7 Core Processes: Reasoning, problem solving, and communication

7.A Analyze a problem situation and represent it mathematically

7.B Select and apply strategies to solve problems.

7.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.
7.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve specific problems.
7.F Summarize mathematical ideas with precision and efficiency for a given audience and purpose.

Reading

Science

Social Studies

Writing

Writing 3.3: Knows and applies writing conventions appropriate for the grade level.
3.3.1 Uses legible handwriting.
3.3.2 Spells accurately in final draft.
3.3.3 Applies capitalization rules.
3.3.4 Applies punctuation rules.

Other Skills

Leadership Skills

Leadership 1.0 Individual Skills
1.6 The student will conduct self in a professional manner in practical career applications, organizational forums, and decision-making bodies.
Leadership 3.0 Community and Career Skills
3.7 The student will participate in the development of a program of work or strategic plan and will work to implement the organization's goals.

Employability Skills

SCANS 1.0 The student identifies, organizes, plans and allocates resources
1.1: Time - Selects goal-relevant activities, ranks them, allocates time, and prepares and follows schedules.
SCANS 3.0 The student acquires and uses information
3.1: Acquires and evaluates information
3.2: Organizes and maintains information
SCANS 5.0 The student works with a variety of technologies
5.1: Selects Technology - Chooses procedures, tools or equipment including computers and related technologies.

Analytical, Logical, and Creative Thinking Skills

☑ Observe	☑ Cause/Effect	☐ Finding Evidence	☑ Reasoning	☑ Originality
☐ Patterns	☐ Fact/Opinion	☑ Evaluation	☑ Problem Solving	☐ Risking
☑ Sequence	☐ Main Idea	☐ Detect Bias	☑ Goal Setting	☑ Inquisitiveness
☐ Classify	☐ Summary	☐ Inference	☑ Fluency	☐ Attending
☐ Compare/Constrast	☐ Point of View	☑ Conclusion	☐ Elaboration	☐ Persistence
☑ Predict	☑ Analysis	☑ Metacognition	☐ Flexibility	☑ Precision

Relevance to Work

Project planning process - pre planning - implementation - refinement of project documents

Unit 7 ADVANCED CONDITIONAL LOOPING AND TRANSFER OF FOCUS	Hours: 10
Performance Assessment(s)	
Industry Standards and Competencies	

EALRs AND GLEs Taught and Assessed in the Standards
Arts
Communications
Health and Fitness
Mathematics
Reading
Science
Social Studies
Writing
Other Skills
Leadership Skills

Employability Skills

Analytical, Logical, and Creative Thinking Skills				
☐ Observe	☐ Cause/Effect	☐ Finding Evidence	☐ Reasoning	☐ Originality
☐ Patterns	☐ Fact/Opinion	☐ Evaluation	☐ Problem Solving	☐ Risking
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☐ Compare/Constrast	☐ Point of View	☐ Conclusion	☐ Elaboration	☐ Persistence
☐ Predict	☐ Analysis	☐ Metacognition	☐ Flexibility	☐ Precision
Relevance to Work				

Unit 8 FOR LOOP REPETITIVE STRUCTURE | Hours: 10

Performance Assessment(s)

Formative - display a table of values, their squares and their cubes
Formative - Car Payment calculator
Summative - Mortgage Payment calculator

Industry Standards and Competencies

C-3 Solve problems using critical thinking
- 3.1 Demonstrate skills used to define and analyze a given problem
- 3.2 Explain the importance and dynamics of individual and teamwork approaches of problem solving
- 3.3 Describe methods of researching and validating reliable information relevant to the problem
- 3.4 Explain strategies used to formulate ideas, proposals and solutions to problems
- 3.5 Select potential solutions based on reasoned criteria
- 3.6 Implement and evaluate solution(s)

C-9 Apply Problem Solving and Troubleshooting Basics
- 9.1 Define and document a problem
- 9.2 Define possible causes of a problem
- 9.3 Determine and discuss possible solutions to a problem
- 9.4 Explain and perform basic troubleshooting and maintenance tasks

C-10 Explain programming concepts
- 10.3 Identify the applications appropriate for each programming language

C-12 Demonstrate project management skills
- 12.5 Evaluate project requirements
- 12.6 Identify required resources and budget
- 12.8 Develop initial project management flow chart
- 12.14 Develop method of evaluation
- 12.15 Formulate a task strategy

C-13 Prepare and present documentation
- 13.1 Prepare a technical documentation report that is clear, concise, accurate, complete, appropriate, and grammatically correct
- 13.2 Describe the contents, characteristics and the purpose of network documentation, user documentation, troubleshooting logs, and maintenance logs

C-14 Explain fundamental programming theory
- 14.6 Analyze a problem identifying desired outputs for given inputs
- 14.7 Describe the fundamental data types and their operations (including arrays)
- 14.8 Design program logic using graphical techniques (flow charts)
- 14.9 Design program logic using pseudocode techniques
- 14.10 Identify the use of program design tools
- 14.11 Explain structured/modular programming

C-15 Plan programs
- 15.1 Develop a problem statement
- 15.2 Define the assumptions that define the scope of the problem
- 15.3 List strategies used to gather known information
- 15.4 Apply known information to the problem statement
- 15.5 Hypothesize expected output

C-16 Develop programs (16.1 - 16.19)

16.1 Develop programs using desired language
16.2 Develop programs that use arithmetic operations
16.3 Develop programs that use relational operators
16.4 Explain and apply the use of logical operators
16.5 Explain and apply compound conditions
16.6 Explain and apply control breaks
16.7 Explain and apply methods of calculating subtotals and final totals
16.8 Explain and apply iterative and conditional loops

C-16 Develop programs (16.20 - 16.34)

16.22 Define and apply built in functions
16.23 Create user defined functions
16.28 Generate executable code
16.29 Provide internal documentation
16.32 Annotate program and design and revision

C-17 Implement and manage software

17.3 Explain and demonstrate a program's use/function
17.4 Plan and write end user documentation
17.7 Document installation and configuration procedures

C-18 Test and follow a Quality Assurance Process

18.1 Create a testing plan
18.2 Implement a testing plan
18.3 Demonstrate ability to provide feedback to the development process

EALRs AND GLEs Taught and Assessed in the Standards

Arts

- Presents work to others in a performance, exhibition, and/or production.

3.1 Uses the arts to express and present ideas and feelings.
3.2 Uses the arts to communicate for a specific purpose.

Communications

Health and Fitness

Mathematics

Algebra 1.1 Core Content: Solving Problems

1.1.A Select and justify functions and equations to model and solve problems.
1.1.D Solve problems that can be represented by quadratic functions and equations.
1.2.B Recognize the multiple uses of variables, determine all possible values of variables that satisfy prescribed conditions, and evaluate algebraic expressions that involve variables.
1.2.C Interpret and use integer exponents and square and cube roots, and apply the laws and properties of exponents to simplify and evaluate exponential expressions.
1.4.A Write and solve linear equations and inequalities in one variable

Algebra 1.8 Core Processes: Reasoning, problem solving, and communication

1.8.A Analyze a problem situation and represent it mathematically.
1.8.B Select and apply strategies to solve problems.

1.8.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.
1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class or related problems to solve specific problems.

1.C Use deductive reasoning to prove that a valid geometric statement is true.
7.A Analyze a problem situation and represent it mathematically
7.B Select and apply strategies to solve problems.
7.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve specific problems.

Reading

Science

Social Studies

Writing

Other Skills

Leadership Skills

Leadership 1.0 Individual Skills
1.1 The student will analyze, refine, and apply decision-making skills through classroom, family, community, and business and industry (work related) experiences.

Employability Skills

SCANS 1.0 The student identifies, organizes, plans and allocates resources
1.1: Time - Selects goal-relevant activities, ranks them, allocates time, and prepares and follows schedules.
SCANS 2.0 The student demonstrates interpersonal skills in working well with others.
2.3: Serves clients/customers
SCANS 3.0 The student acquires and uses information
3.1: Acquires and evaluates information
3.2: Organizes and maintains information
3.3: Interprets and communicates information
3.4: Uses computers to process information
SCANS 5.0 The student works with a variety of technologies
5.1: Selects Technology - Chooses procedures, tools or equipment including computers and related technologies.
5.2: Applies Technology to Task - Understands overall intent and proper procedures for setup and operation of equipment.
5.3: Maintains and Troubleshoots Equipment - Prevents, identifies, or solves problems with equipment, including computers and other technologies.

Analytical, Logical, and Creative Thinking Skills				
☐ Observe	☐ Cause/Effect	☐ Finding Evidence	☑ Reasoning	☐ Originality
☐ Patterns	☐ Fact/Opinion	☑ Evaluation	☑ Problem Solving	☐ Risking
☑ Sequence	☐ Main Idea	☐ Detect Bias	☐ Goal Setting	☐ Inquisitiveness
☑ Classify	☐ Summary	☐ Inference	☑ Fluency	☐ Attending
☐ Compare/Constrast	☐ Point of View	☑ Conclusion	☐ Elaboration	☐ Persistence
☑ Predict	☑ Analysis	☑ Metacognition	☐ Flexibility	☑ Precision

Relevance to Work
Project planning process - pre planning - implementation - refinement of project documents

Unit 9 INTRODUCTION TO ANIMATION AND GAME DESIGN | Hours: 20

Performance Assessment(s)

Formative - animate alice
Formative - shoot magic cookies at alice
Summative - Arcade Game, students will create an a simple arcade game that has a animated object moving across the screen, create an appropriate background, have an animated object that they control and use to aim at their animated object. Fire on their animated object and score points.

Industry Standards and Competencies

C-3 Solve problems using critical thinking
- 3.1 Demonstrate skills used to define and analyze a given problem
- 3.5 Select potential solutions based on reasoned criteria
- 3.6 Implement and evaluate solution(s)

C-9 Apply Problem Solving and Troubleshooting Basics
- 9.1 Define and document a problem
- 9.2 Define possible causes of a problem
- 9.3 Determine and discuss possible solutions to a problem
- 9.4 Explain and perform basic troubleshooting and maintenance tasks

C-12 Demonstrate project management skills
- 12.15 Formulate a task strategy
- 12.16 Prioritize tasks according to customer needs

C-13 Prepare and present documentation
- 13.1 Prepare a technical documentation report that is clear, concise, accurate, complete, appropriate, and grammatically correct
- 13.2 Describe the contents, characteristics and the purpose of network documentation, user documentation, troubleshooting logs, and maintenance logs

C-15 Plan programs
- 15.1 Develop a problem statement
- 15.2 Define the assumptions that define the scope of the problem
- 15.3 List strategies used to gather known information
- 15.4 Apply known information to the problem statement
- 15.5 Hypothesize expected output

C-16 Develop programs (16.1 - 16.19)
- 16.1 Develop programs using desired language
- 16.2 Develop programs that use arithmetic operations
- 16.3 Develop programs that use relational operators
- 16.4 Explain and apply the use of logical operators
- 16.5 Explain and apply compound conditions
- 16.6 Explain and apply control breaks
- 16.7 Explain and apply methods of calculating subtotals and final totals
- 16.8 Explain and apply iterative and conditional loops

C-16 Develop programs (16.20 - 16.34)
- 16.23 Create user defined functions
- 16.25 Test and run a program for desired output
- 16.26 Explain and apply methods used to debug a program
- 16.27 Utilize reference materials for problem solving

16.28 Generate executable code
16.29 Provide internal documentation

C-17 Implement and manage software

17.2 Identify sources and techniques used to gather information needed for implementation
17.3 Explain and demonstrate a program's use/function
17.4 Plan and write end user documentation

C-18 Test and follow a Quality Assurance Process

18.1 Create a testing plan
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EALRs AND GLEs Taught and Assessed in the Standards

Arts

3.2 Uses the arts to communicate for a specific purpose.

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Algebra 1.1 Core Content: Solving Problems

1.1.A Select and justify functions and equations to model and solve problems.
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1.2.C Interpret and use integer exponents and square and cube roots, and apply the laws and properties of exponents to simplify and evaluate exponential expressions.

Algebra 1.3 Core Content: Characteristics and behaviors of functions

Algebra 1.4 Core Content: Linear functions, equations, and inequalities

1.4.A Write and solve linear equations and inequalities in one variable

Algebra 1.8 Core Processes: Reasoning, problem solving, and communication

1.8.A Analyze a problem situation and represent it mathematically.
1.8.B Select and apply strategies to solve problems.

Geometry 7 Core Processes: Reasoning, problem solving, and communication

7.A Analyze a problem situation and represent it mathematically
7.B Select and apply strategies to solve problems.

Reading

Science

Social Studies

Writing

Writing 2.2: Writes for different purposes.

2.2.1 Demonstrates understanding of different purposes for writing.
Writing 2.3: Writes in a variety of forms/genres.
2.3.1 Uses a variety of forms/genres.
Writing 2.4: Writes for career applications.
2.4.1 Produces documents used in a career setting.

Other Skills

Leadership Skills

Leadership 1.0 Individual Skills
1.1 The student will analyze, refine, and apply decision-making skills through classroom, family, community, and business and industry (work related) experiences.
Leadership 3.0 Community and Career Skills
3.1 The student will analyze the roles and responsibilities of citizenship.

Employability Skills

SCANS 1.0 The student identifies, organizes, plans and allocates resources
1.1: Time - Selects goal-relevant activities, ranks them, allocates time, and prepares and follows schedules.
SCANS 3.0 The student acquires and uses information
3.1: Acquires and evaluates information
SCANS 4.0 The student understands complex systems and inter-relationships
4.3: Improves or Designs Systems - Suggests modifications to existing systems and develops new or alternative systems to improve performance.
SCANS 5.0 The student works with a variety of technologies
5.1: Selects Technology - Chooses procedures, tools or equipment including computers and related technologies.
5.2: Applies Technology to Task - Understands overall intent and proper procedures for setup and operation of equipment.
5.3: Maintains and Troubleshoots Equipment - Prevents, identifies, or solves problems with equipment, including computers and other technologies.

Analytical, Logical, and Creative Thinking Skills

☐ Observe	☑ Cause/Effect	☐ Finding Evidence	☑ Reasoning	☐ Originality
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Relevance to Work

Project planning process - pre planning - implementation - refinement of project documents