

	<h2>Great Oaks Web Applications and Game Development Essential Skills Profile</h2>
	<p>This profile provides an outline of the skills required for successful completion of this career program. Additional information is located on the Great Oaks website at http://hs.greatoaks.com/essential-skills-high-school-programs/ and selecting the corresponding career program.</p>

Recommended WorkKeys® Scores for Web Applications and Game Development

Applied Mathematics-5	Graphic Literacy-4
Workplace Documents-4	

*Practice tests and more information at www.act.org/workkeys

Essential Skills Needed to Successfully Complete the Program			
Rating Key:	Low = Slightly Essential	Medium = Essential	High = Very Essential

Key Vocational Factors		Rating
Visual Acuity	The ability to detect differences/details visually	High
Depth Perception	The ability to detect the physical distance/depth of objects in space and time	High
Oral Communication	The ability to express/explain ideas	High
Oral Expression	The ability to verbally explain and express self in an intelligible manner so others will understand	High
Written Communication	The ability to communicate in a written format and record information accurately	High
Physical Mobility/Strength	Extended standing, bending, stooping, and lifting/moving computers, sitting for extended times	Medium
Eye-hand Coordination	The ability to use tools	High
Auditory Acuity	The ability to detect differences in pitch and sound	Medium
Clerical Perception	Ability to perceive pertinent detail in verbal and tabular material	High

Worker Trait Skills	Rating
Ability to get along with others	Medium
Ability to work independently, without close supervision	High
Ability to work toward work including tasks of minimal interest	High
Ability to work accurately, recheck and correct work, to an industry standard	High
Ability to follow and retain:	
Multistep oral instructions	High
Written instructions/technical manuals - multistep	High
Simple to complex diagram instructions	High
Visual models or demonstrated instructions	High

Ability to use tools of trade (personal computer, notebook computers, high capacity removable media drives, desktop computers, computer servers, mobile phones, various software and programming, etc.)	High
Ability to use numerical data (count, measure, compute, etc.) in applied setting	High
Ability to discriminate between objects of similar:	
Size	Medium
Shape	Medium
Color	Medium
Spatial relationship	Medium
Ability to organize work process/follow defined procedures	High
Ability to refer to charts for troubleshooting and specifications	High
Able to sequence events or follow a sequence as necessary	High
Programming: Writing computer programs for various purposes.	High
Critical Thinking: Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems	High
Complex Problem Solving: Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions	High
Active Listening: Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times	High

Reading Skills *See Recommended WorkKeys® Scores Above	
High Reading Comprehension and Written Language skills	
Math Skills *See Recommended WorkKeys® Scores Above	
Counting-Recording-Comparing-Calculating	Whole numbers and decimals
Calculating fractions, decimals, ratios, order of operations	Geometry
Ratio, Algebra, formulas, square roots	Advanced Algebra
	*Solid Higher-Level math with minimum of Algebra

Additional Abilities Required

Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.
Near Vision	The ability to see details at close range (within a few feet of the observer).
Originality	The ability to come up with unusual or clever ideas about a given topic or situation, or to develop creative ways to solve a problem.

Fluency of Ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).
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Knowledge Required in Web Applications and Game Development Field

English Language	Knowledge of the structure and content of the English language including the meaning and spelling of words, rules of composition, and grammar.
Computers and Electronics	Knowledge of circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.
Mathematics	Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications.

Additional Considerations

This program is not about playing or learning to play games	Students must like to code
High level of math and analytical skills required	

Web Applications and Game Development Work Activities

Design, build, or maintain web sites, using authoring or scripting languages, content creation tools, management tools, and digital media.	Confer with management or development teams to prioritize needs, resolve conflicts, develop content criteria, or choose solution.
Perform or direct website updates.	Write, design, or edit web page content, or direct others producing content.
Maintain understanding of current web technologies or programming practices through continuing education, reading, or participation in professional conferences, workshops, or groups.	Python programming: if then statements; do while; if, then, else; conditions based on Boolean operators; convert strings to value; concatenation.
Back up files from web sites to local directories for instant recovery in case of problems.	Analyze user needs to determine technical requirements.
Identify problems uncovered by testing or customer feedback, and correct problems or refer problems to appropriate personnel for correction.	Evaluates code to ensure it is valid, is properly structured, meets industry standards, and is compatible with browsers, devices, or operating systems.
Work activities centered on debugging and trouble-shooting code.	Develop or validate test routines and schedules to ensure that test cases mimic external interfaces and address all browser and device types.

Develop databases that support web applications and websites.	Write supporting code for Web applications or websites.
Renew domain name registrations.	Select programming languages, design tools, or applications.
Collaborate with management or users to develop e-commerce strategies and to integrate these strategies with websites.	Communicate with network personnel or Web site hosting agencies to address hardware or software issues affecting websites.
Design and implement website security measures, such as firewalls or message encryption.	Perform website tests according to planned schedules, or after any website or product revision.
Incorporate technical considerations into website design plans, such as budgets, equipment, performance requirements, or legal issues including accessibility and privacy.	Develop website maps, application models, image templates, or page templates that meet project goals, user needs, or industry standards.
Respond to user email inquiries, or set up automated systems to send responses.	Develop or implement procedures for ongoing web site revision.
Develop and document style guidelines for website content.	Identify or maintain links to and from other websites and check links to ensure proper functioning.
Establish appropriate server directory trees.	Create searchable indices for web page content.
Recommend and implement performance improvements.	Register websites with search engines to increase website traffic.
Provide clear, detailed descriptions of website specifications, such as product features, activities, software, communication protocols, programming languages, and operating systems software and hardware.	Monitor security system performance logs to identify problems and notify security specialists when problems occur.
Create web models or prototypes that include physical, interface, logical, or data models.	Document test plans, testing procedures, or test results.
Evaluate or recommend server hardware or software.	Develop system interaction or sequence diagrams.
Research, document, rate, or select alternatives for web architecture or technologies.	Guide design discussions between development teams.
Document technical factors such as server load, bandwidth, database performance, and browser and device types.	Install and configure hypertext transfer protocol (HTTP) servers and associated operating systems.
Create core game features including storylines, role-play mechanics, and character biographies for a new video game or game franchise.	Create and manage documentation, production schedules, prototyping goals, and communication plans in collaboration with production staff.
Conduct regular design reviews throughout the game development process.	Solicit, obtain, and integrate feedback from design and technical staff into original game design.
Document all aspects of formal game design, using mock-up screenshots, sample menu layouts, gameplay flowcharts, and other graphical devices.	Prepare and revise initial game sketches using two- and three-dimensional graphical design software.

Prepare two-dimensional concept layouts or three-dimensional mock-ups.	Consult with multiple stakeholders to define requirements and implement online features.
Write or supervise the writing of game text and dialogue.	Provide test specifications to quality assurance staff.

Technology

Web platform development software	Operating system software
Database user interface and query software	Development environment software
Video creation and editing software	Object or component-oriented development software
Graphics or photo imaging software	

Available Certifications

Microsoft Technology Associate IT Developer (6 points)	Microsoft Technology Associate IT Database (6 points)
Microsoft Technology Associate IT Infrastructure (6 points)	CompTIA A+ Certification (6 points)
IC3 Digital Literacy (2 points)	CPR/First Aid Certification (1 point)
CompTIA ITF+ Certification	MOS Certifications

Possible College Credits

College Credit Plus in English, Math, Social Studies, or Science	Must be preapproved. Must pass a college course at an Ohio college or College Credit Plus class at Great Oaks.
Career Technical Credit Transfer	<p>The Ohio Transfer to Degree Guarantee helps career and technical students transfer credits earned in high school to community college or four-year degree programs. The credit can be used at any Ohio public college or university:</p> <ul style="list-style-type: none"> • If you successfully completed your career-technical program and passed certain required assessments. • If you attend a similar program at a public Ohio college or university. <p>For more information, go to www.transfercredit.ohio.gov.</p>

*Additional college or post-secondary education may be required in this field

Possible Career Pathways

Database Specialist	Website Developer
Program Developer	Game Designer
Applications Developer	Customer Service Pathway
Office Specialist Pathway	