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| **COURSE INTRODUCTION:****Computer technology skills are vital to business; they permeate the entire workplace. Familiarity with computer programming is required in a growing number of firms and occupations primarily because of the increasingly widespread use of computerized management information systems.****This course focuses on converting problems into detailed plans, writing code into computer language, testing, monitoring, debugging, documenting and maintaining computer programs. Students will also design programs for specific uses.** |

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| **UNIT DESCRIPTION: Students will learn how to create a program and validate the code.** | **SUGGESTED UNIT TIMELINE: 2 WEEKS** **CLASS PERIOD (min.): 50 MINUTES** |
| **ESSENTIAL QUESTIONS:**1. What changes with each execution of a program?
2. Why follow standards?
3. Why validate input?
4. What is the benefit of using a method?
 |
|  |
| **ESSENTIAL MEASURABLE LEARNING OBJECTIVES**  | **CCSS LEARNING GOALS (Anchor Standards/Clusters)** | **CROSSWALK TO STANDARDS** |
| **GLEs/CLEs** | **PS** | **CCSS** | **OTHER** | **DOK** |
| 1. Use correct syntax and naming conventions of a given programming language
 |  |  |  | **RI.11-12.1****RI.11-12.2****RI.11-12.3****RI.11-12.4****RI.11-12.5****RI.11-12.6****RI.11-12.7****RI.11-12.10****L.11-12.1****L.11-12.2****L.11-12.3****L.11-12.4****L.11-12.5****L.11-12.6****RST.11-12.1****RST.11-12.2****RST.11-12.3****RST.11-12.4****RST.11-12.5****RST.11-12.6****RST.11-12.7****RST.11-12.8****RST.11-12.9****RST.11-12.10****WHST.11-12.6****WHST.11-12.7** | **IT-X.3****IT-X.4****IT-XI.2****IT-XI.3****IT-XI.4****IT-XVI.1****IT-XVI.2****IT-XVI.3****IT-XVI.4****IT-XIV.1****IT-XIV.2****IT-XIII.1****IT-XIII.2****IT-XIII.3****IT-XIII.4****COMP-I.1****COMP-II.1****COMP-II.2****COMP-III.1****COMP-III.2****COMP-IV.1****COMP-IV.2****COMP-IV.3****COMP-V.2****COMP-V.3****COMP-V.4****COMP-VI-A.3****COMP-VI-A.4****COMP-VI-B.1****COMP-VI-B.2****COMP-VI-B.3****COMP-VI-B.4****COMP-VI-C.1****COMP-VI-C.2****COMP-VI-C.3****COMP-VI-D.1****COMP-VI-D.2****COMP-VI-D.3****COMP-VI-E.3****COMP-VI-E.4****COMP-VI-F.2****COMP-VI-F.3****COMP-VI-F.4****COMP-VI-G.1****COMP-VI-G.2****COMP-VI-G.3****COMP-VI-H.1****COMP-VI-H.2****COMP-VI-H.3****COMP-VI-H.4****COMP-VI-I.3****COMP-VI-I.4****COMP-VI-J.3****COMP-VI-J.4****COMP-VI-K.2****COMP-VI-K.3****COMP-VI-L.3****COMP-VI-M.3** | **3** |
| 1. Create a program using internal documentation
 |  |  |  | **S-ID.8****S-MD.5****S-MD.6****S-MD.7****S-MD.8****G-SRT.8****G-GPE.7****G-GMD.3****G-MG.2****F-BF.1****F-BF.2****A-SSE.4****A-APR.1****A-APR.6****A-CED.1****A-CED.4****A-REI.1****A-REI.2****A-REI.3****A-REI.4****RST.11-12.1****RST.11-12.2****RST.11-12.3****RST.11-12.4****RST.11-12.5****RST.11-12.6****RST.11-12.7****RST.11-12.8****RST.11-12.9****RST.11-12.10****WHST.11-12.6****WHST.11-12.7** | **IT-X.3****IT-X.4****IT-XI.2****IT-XI.3****IT-XI.4****IT-XVI.1****IT-XVI.2****IT-XVI.3****IT-XVI.4****IT-XIV.1****IT-XIV.2****IT-XIII.1****IT-XIII.2****IT-XIII.3****IT-XIII.4****COMP-I.1****COMP-II.1****COMP-II.2****COMP-III.1****COMP-III.2****COMP-IV.1****COMP-IV.2****COMP-IV.3****COMP-V.2****COMP-V.3****COMP-V.4****COMP-VI-A.3****COMP-VI-A.4****COMP-VI-B.1****COMP-VI-B.2****COMP-VI-B.3****COMP-VI-B.4****COMP-VI-C.1****COMP-VI-C.2****COMP-VI-C.3****COMP-VI-D.1****COMP-VI-D.2****COMP-VI-D.3****COMP-VI-E.3****COMP-VI-E.4****COMP-VI-F.2****COMP-VI-F.3****COMP-VI-F.4****COMP-VI-G.1****COMP-VI-G.2****COMP-VI-G.3****COMP-VI-H.1****COMP-VI-H.2****COMP-VI-H.3****COMP-VI-H.4****COMP-VI-I.3****COMP-VI-I.4****COMP-VI-J.3****COMP-VI-J.4****COMP-VI-K.2****COMP-VI-K.3****COMP-VI-L.3****COMP-VI-M.3****COMM-I.A.1****COMM-I.A.2****COMM-I.A.3****COMM-I.A.4****COMM-I.B.1****COMM-I.B.2****COMM-I.B.3****COMM-I.B.4****COMM-I.C.1****COMM-I.C.2****COMM-I.C.3****COMM-I.C.4****COMM-I.D.1****COMM-I.D.2****COMM-I.D.3****COMM-I.D.4****COMM-III.E.3****COMM-IV.1****COMM-IV.2****COMM-IV.3****COMM-IV.4** | **4** |
| 1. Identify the use and limitations of different data types (integer, double, and constant)
 |  |  |  | **N.RN.1****N.RN.2****N.RN.3****N.Q.1****N.Q.2****N.Q.3****RST.11-12.1****RST.11-12.2****RST.11-12.3****RST.11-12.4****RST.11-12.5****RST.11-12.6****RST.11-12.7****RST.11-12.8****RST.11-12.9****RST.11-12.10****WHST.11-12.6****WHST.11-12.7** |  | **1** |
| 1. Create programs that include: variables and constants; counters and accumulators; arithmetic operations and functions; conditional statement; loop instruction; required user input; input validation; opening, writing, and reading from a data file; producing formatted output; modular program using one or more methods; that passes data to methods using parameters
 |  |  |  | **S-ID.8****S-MD.5****S-MD.6****S-MD.7****S-MD.8****G-SRT.8****G-GPE.7****G-GMD.3****G-MG.2****F-BF.1****F-BF.2****A-SSE.4****A-APR.1****A-APR.6****A-CED.1****A-CED.4****A-REI.1****A-REI.2****A-REI.3****A-REI.4****RST.11-12.1****RST.11-12.2****RST.11-12.3****RST.11-12.4****RST.11-12.5****RST.11-12.6****RST.11-12.7****RST.11-12.8****RST.11-12.9****RST.11-12.10****WHST.11-12.6****WHST.11-12.7** | **IT-X.3****IT-X.4****IT-XI.2****IT-XI.3****IT-XI.4****IT-XVI.1****IT-XVI.2****IT-XVI.3****IT-XVI.4****IT-XIV.1****IT-XIV.2****IT-XIII.1****IT-XIII.2****IT-XIII.3****IT-XIII.4****COMP-I.1****COMP-II.1****COMP-II.2****COMP-III.1****COMP-III.2****COMP-IV.1****COMP-IV.2****COMP-IV.3****COMP-V.2****COMP-V.3****COMP-V.4****COMP-VI-A.3****COMP-VI-A.4****COMP-VI-B.1****COMP-VI-B.2****COMP-VI-B.3****COMP-VI-B.4****COMP-VI-C.1****COMP-VI-C.2****COMP-VI-C.3****COMP-VI-D.1****COMP-VI-D.2****COMP-VI-D.3****COMP-VI-E.3****COMP-VI-E.4****COMP-VI-F.2****COMP-VI-F.3****COMP-VI-F.4****COMP-VI-G.1****COMP-VI-G.2****COMP-VI-G.3****COMP-VI-H.1****COMP-VI-H.2****COMP-VI-H.3****COMP-VI-H.4****COMP-VI-I.3****COMP-VI-I.4****COMP-VI-J.3****COMP-VI-J.4****COMP-VI-K.2****COMP-VI-K.3****COMP-VI-L.3****COMP-VI-M.3** | **4** |
| 1. Identify type of errors (e.g. syntax, run-time and logic)
 |  |  |  | **RST.11-12.1****RST.11-12.2****RST.11-12.3****RST.11-12.4****RST.11-12.5****RST.11-12.6****RST.11-12.7****RST.11-12.8****RST.11-12.9****RST.11-12.10****WHST.11-12.6****WHST.11-12.7** | **COMM-I.A.1****COMM-I.A.2****COMM-I.A.3****COMM-I.A.4****COMM-I.B.1****COMM-I.B.2****COMM-I.B.3****COMM-I.B.4****COMM-I.C.1****COMM-I.C.2****COMM-I.C.3****COMM-I.C.4****COMM-I.D.1****COMM-I.D.2****COMM-I.D.3****COMM-I.D.4****COMM-III.E.3****COMM-IV.1****COMM-IV.2****COMM-IV.3****COMM-IV.4** | **1** |
| 1. Create a program with a standard graphic user interface (GUI) that includes: objects and menus; and a custom GUI
 |  |  |  | **S-ID.8****S-MD.5****S-MD.6****S-MD.7****S-MD.8****G-SRT.8****G-GPE.7****G-GMD.3****G-MG.2****F-BF.1****F-BF.2****A-SSE.4****A-APR.1****A-APR.6****A-CED.1****A-CED.4****A-REI.1****A-REI.2****A-REI.3****A-REI.4****RST.11-12.1****RST.11-12.2****RST.11-12.3****RST.11-12.4****RST.11-12.5****RST.11-12.6****RST.11-12.7****RST.11-12.8****RST.11-12.9****RST.11-12.10****WHST.11-12.6****WHST.11-12.7** | **IT-VII.1****IT-VII.2****IT-VII.3****IT-VII.4****IT-X.3****IT-X.4****IT-XI.2****IT-XI.3****IT-XI.4****IT-XVI.1****IT-XVI.2****IT-XVI.3****IT-XVI.4****IT-XIV.1****IT-XIV.2****IT-XIII.1****IT-XIII.2****IT-XIII.3****IT-XIII.4****COMP-I.1****COMP-II.1****COMP-II.2****COMP-III.1****COMP-III.2****COMP-IV.1****COMP-IV.2****COMP-IV.3****COMP-V.2****COMP-V.3****COMP-V.4****COMP-VI-A.3****COMP-VI-A.4****COMP-VI-B.1****COMP-VI-B.2****COMP-VI-B.3****COMP-VI-B.4****COMP-VI-C.1****COMP-VI-C.2****COMP-VI-C.3****COMP-VI-D.1****COMP-VI-D.2****COMP-VI-D.3****COMP-VI-E.3****COMP-VI-E.4****COMP-VI-F.2****COMP-VI-F.3****COMP-VI-F.4****COMP-VI-G.1****COMP-VI-G.2****COMP-VI-G.3****COMP-VI-H.1****COMP-VI-H.2****COMP-VI-H.3****COMP-VI-H.4****COMP-VI-I.3****COMP-VI-I.4****COMP-VI-J.3****COMP-VI-J.4****COMP-VI-K.2****COMP-VI-K.3****COMP-VI-L.3****COMP-VI-M.3** | **4** |
| 1. Modify an existing program
 |  |  |  | **S-ID.8****S-MD.5****S-MD.6****S-MD.7****S-MD.8****G-SRT.8****G-GPE.7****G-GMD.3****G-MG.2****F-BF.1****F-BF.2****A-SSE.4****A-APR.1****A-APR.6****A-CED.1****A-CED.4****A-REI.1****A-REI.2****A-REI.3****A-REI.4****RST.11-12.1****RST.11-12.2****RST.11-12.3****RST.11-12.4****RST.11-12.5****RST.11-12.6****RST.11-12.7****RST.11-12.8****RST.11-12.9****RST.11-12.10****WHST.11-12.6****WHST.11-12.7** | **IT-X.3****IT-X.4****IT-XI.2****IT-XI.3****IT-XI.4****IT-XVI.1****IT-XVI.2****IT-XVI.3****IT-XVI.4****IT-XIV.1****IT-XIV.2****IT-XIII.1****IT-XIII.2****IT-XIII.3****IT-XIII.4****COMP-I.1****COMP-II.1****COMP-II.2****COMP-III.1****COMP-III.2****COMP-IV.1****COMP-IV.2****COMP-IV.3****COMP-V.2****COMP-V.3****COMP-V.4****COMP-VI-A.3****COMP-VI-A.4****COMP-VI-B.1****COMP-VI-B.2****COMP-VI-B.3****COMP-VI-B.4****COMP-VI-C.1****COMP-VI-C.2****COMP-VI-C.3****COMP-VI-D.1****COMP-VI-D.2****COMP-VI-D.3****COMP-VI-E.3****COMP-VI-E.4****COMP-VI-F.2****COMP-VI-F.3****COMP-VI-F.4****COMP-VI-G.1****COMP-VI-G.2****COMP-VI-G.3****COMP-VI-H.1****COMP-VI-H.2****COMP-VI-H.3****COMP-VI-H.4****COMP-VI-I.3****COMP-VI-I.4****COMP-VI-J.3****COMP-VI-J.4****COMP-VI-K.2****COMP-VI-K.3****COMP-VI-L.3****COMP-VI-M.3** | **3** |
| 1. Create a program in collaboration with a team
 |  |  |  | **S-ID.8****S-MD.5****S-MD.6****S-MD.7****S-MD.8****G-SRT.8****G-GPE.7****G-GMD.3****G-MG.2****F-BF.1****F-BF.2****A-SSE.4****A-APR.1****A-APR.6****A-CED.1****A-CED.4****A-REI.1****A-REI.2****A-REI.3****A-REI.4****SL.11-12.1****SL.11-12.2****SL.11-12.3****SL.11-12.4****SL.11-12.5****SL.11-12.6****L.11-12.1****L.11-12.2****L.11-12.3****L.11-12.4****L.11-12.5****L.11-12.6****RST.11-12.1****RST.11-12.2****RST.11-12.3****RST.11-12.4****RST.11-12.5****RST.11-12.6****RST.11-12.7****RST.11-12.8****RST.11-12.9****RST.11-12.10****WHST.11-12.6****WHST.11-12.7** | **IT-X.3****IT-X.4****IT-XI.2****IT-XI.3****IT-XI.4****IT-XVI.1****IT-XVI.2****IT-XVI.3****IT-XVI.4****IT-XIV.1****IT-XIV.2****IT-XIII.1****IT-XIII.2****IT-XIII.3****IT-XIII.4****COMP-I.1****COMP-II.1****COMP-II.2****COMP-III.1****COMP-III.2****COMP-IV.1****COMP-IV.2****COMP-IV.3****COMP-V.2****COMP-V.3****COMP-V.4****COMP-VI-A.3****COMP-VI-A.4****COMP-VI-B.1****COMP-VI-B.2****COMP-VI-B.3****COMP-VI-B.4****COMP-VI-C.1****COMP-VI-C.2****COMP-VI-C.3****COMP-VI-D.1****COMP-VI-D.2****COMP-VI-D.3****COMP-VI-E.3****COMP-VI-E.4****COMP-VI-F.2****COMP-VI-F.3****COMP-VI-F.4****COMP-VI-G.1****COMP-VI-G.2****COMP-VI-G.3****COMP-VI-H.1****COMP-VI-H.2****COMP-VI-H.3****COMP-VI-H.4****COMP-VI-I.3****COMP-VI-I.4****COMP-VI-J.3****COMP-VI-J.4****COMP-VI-K.2****COMP-VI-K.3****COMP-VI-L.3****COMP-VI-M.3****COMM-I.A.1****COMM-I.A.2****COMM-I.A.3****COMM-I.A.4****COMM-I.B.1****COMM-I.B.2****COMM-I.B.3****COMM-I.B.4****COMM-I.C.1****COMM-I.C.2****COMM-I.C.3****COMM-I.C.4****COMM-I.D.1****COMM-I.D.2****COMM-I.D.3****COMM-I.D.4****COMM-III.E.3****COMM-IV.1****COMM-IV.2****COMM-IV.3****COMM-IV.4****MGMT-IV-A.1****MGMT-IV-A.2****MGMT-IV-A.3****MGMT-IV-A.4****MGMT-IV-B.1****MGMT-IV-B.2****MGMT-IV-B.3****MGMT-IV-B.4****MGMT-IV-C.3****MGMT-IV-C.4****MGMT-IV-D.1****MGMT-IV-D.2****MGMT-IV-D.3****MGMT-IV-D.4****MGMT-IV-E.1****MGMT-IV-E.2****MGMT-IV-E.3****MGMT-IV-E.4****MGMT-V-A.1****MGMT-V-A.2****MGMT-V-A.3****MGMT-V-B.2****MGMT-V-B.3****MGMT-VIII-A.1****MGMT-VIII-A.2****MGMT-VIII-A.3****MGMT-VIII-A.4****CARDEV-III.A.1****CARDEV-III.A.2****CARDEV-III.A.3****CARDEV-III.A.4****CARDEV-III.B.1****CARDEV-III.B.2****CARDEV-III.B.3****CARDEV-III.B.4****CARDEV-III.C.1****CARDEV-III.C.2****CARDEV-III.C.3****CARDEV-III.C.4****CARDEV-III.D.1****CARDEV-III.D.2****CARDEV-III.D.3****CARDEV-III.D.4****CARDEV-III.E.1****CARDEV-III.E.2****CARDEV-III.E.3****CARDEV-III.E.4****CARDEV-V-B.1****CARDEV-V-B.2****CARDEV-V-B.3** | **4** |
| 1. Describe and practice steps of troubleshooting and debugging
 |  |  |  | **RI.11-12.1****RI.11-12.2****RI.11-12.3****RI.11-12.4****RI.11-12.5****RI.11-12.6****RI.11-12.7****RI.11-12.10****L.11-12.1****L.11-12.2****L.11-12.3****L.11-12.4****L.11-12.5****L.11-12.6****RST.11-12.1****RST.11-12.2****RST.11-12.3****RST.11-12.4****RST.11-12.5****RST.11-12.6****RST.11-12.7****RST.11-12.8****RST.11-12.9****RST.11-12.10****WHST.11-12.6****WHST.11-12.7** | **IT-X.3****IT-X.4****IT-XI.2****IT-XI.3****IT-XI.4****IT-XVI.1****IT-XVI.2****IT-XVI.3****IT-XVI.4****IT-XIV.1****IT-XIV.2****IT-XIII.1****IT-XIII.2****IT-XIII.3****IT-XIII.4****COMP-I.1****COMP-II.1****COMP-II.2****COMP-III.1****COMP-III.2****COMP-IV.1****COMP-IV.2****COMP-IV.3****COMP-V.2****COMP-V.3****COMP-V.4****COMP-VI-A.3****COMP-VI-A.4****COMP-VI-B.1****COMP-VI-B.2****COMP-VI-B.3****COMP-VI-B.4****COMP-VI-C.1****COMP-VI-C.2****COMP-VI-C.3****COMP-VI-D.1****COMP-VI-D.2****COMP-VI-D.3****COMP-VI-E.3****COMP-VI-E.4****COMP-VI-F.2****COMP-VI-F.3****COMP-VI-F.4****COMP-VI-G.1****COMP-VI-G.2****COMP-VI-G.3****COMP-VI-H.1****COMP-VI-H.2****COMP-VI-H.3****COMP-VI-H.4****COMP-VI-I.3****COMP-VI-I.4****COMP-VI-J.3****COMP-VI-J.4****COMP-VI-K.2****COMP-VI-K.3****COMP-VI-L.3****COMP-VI-M.3** | **2** |
| **ASSESSMENT DESCRIPTIONS\*: (Write a brief overview here. Identify Formative/Summative. Actual assessments will be accessed by a link to PDF file or Word doc. )** There are a number of formative and summative labs and projects in the assessment folder. These are summative because they continue to build across the length of the course**\*Attach Unit Summative Assessment, including Scoring Guides/Scoring Keys/Alignment Codes and DOK Levels for all items. Label each assessment according to the unit descriptions above ( i.e., Grade Level/Course Title/Course Code, Unit #.)** |
| **Obj. #** | **INSTRUCTIONAL STRATEGIES (research-based): (Teacher Methods)**  |
| 3,5,9 | 1. Lecture
 |
| 1,2,4,6,7,8 | 1. Lecture/demonstration
 |
| **Obj. #** | **INSTRUCTIONAL ACTIVITIES: (What Students Do)** |
| 3, 5 | 1. Datatypes ppt and hand out for the data elements |
| 1,2,4,6,7,8,9 | 2. Other instructional activities will be based upon the language used. These will be primarily lecture/demonstration |
| **UNIT RESOURCES: (include internet addresses for linking)** |