

AP CS P – Unit 3

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Chapter 1

Introduces the foundational concepts of computer programming, which unlocks the ability to make rich, interactive apps. This course uses **JavaScript** as the *programming language*, and **App Lab** as the *programming environment* to build apps. The concepts learned in these lessons span all programming languages and tools.

Words-of-Week (WoW):

Loop: a programming construct that repeats a group of commands.

Iteration: "Loop" by another name - the repetition of a statement, process, or procedure.

For Loop - A particular kind of looping construct provided in many languages. Typically, a for loop defines a counting variable that is checked and incremented on each iteration in order to loop a specific number of times.

Abstraction: Pulling out specific differences to make one solution work for multiple problems.

Schedule:

11/9		Aim: SWBAT Analyze Digital Data Representation Activator: How are data and information similar/different? Lesson: Data Representation Lab:-Bytes & Sizes Task: Bytes & File Sizes Activity
11/8	Read Chp-3.1 & 3.2 Answer the accompanied Qs And Share your work on your personal page and with smalhar@obenschools.org	Aim: SWBAT Analyze & Assess the requirements of CREATE performance task. Activator: What is expected on the Create Performance Task? Lesson: How is the CREATE PERFORMANCE TASK graded? 2017-Create Task Examples: Video Sample-A Code Sample-A Written Sample-A CREATE AP DIGITAL PORTFOLIO STUDENT VIDEO AP-CSP-STUDENT-TASK-DIRECTIONS.PDF More on the AP CSP EXAM
11/7	Suptd. Conf. Day	No School
11/06	Submit the Create project	Aim: How is a Performance Task Score?

Activator: [Scoring a PT Response](#)

Lesson: [Scoring the](#)

- [Design Process PT](#)
- [Managing Code Complexity](#)
- [Identify Abstractions](#)

Task:

11/03 Complete the [Create project](#) over the weekend

Aim: Introduction to Unit-2

Activator: Review Test

Lesson: [Practice Create project](#)

Task: Design a Digital Scene

CYU:

11/02 Read [U3 Lesson: 10](#)
On Google doc explain your understanding of
1) [Create Performance Task Description](#) (pg 113)
2) [2018 Create Scoring Guidelines](#)

Aim: Assess learning on Unit-3

Activator: [Review](#)

Lesson: [Test on Unit-3](#)

Task: [Changes in Unit 3](#)

CYU: [X-Tra Credit](#)

11/01 Review Unit-3 concepts
[Changes in Unit 3](#)

Aim: Analyze [Abstraction in programming](#)

Activator: [Identify the Abstraction](#)

Lesson: [What is Abstraction](#) & [Trace Code](#)

Task: Complete Code.org U3_Ch.9 (15-19)

CYU: [Review Unit-3](#)

10/31 Finish all pending work on Code.org U3_Ch.9 4-14 with challenge Qs
Watch the video [Modern Living Algorithms](#) and answer Qs

Aim: Analyze and create Repetition program

Activator: Draw a square with minimum lines of code

Lesson: [Repetition & Random Numbers](#)

Task: Complete Code.org U3_Ch.9 (4-14)

CYU: [Under the Sea](#)

10/30 Finish all pending work on Code.org U3_Ch.1-8 with challenge Qs

Aim: Use a loop in a program to simplify the expression of repeated tasks

Activator: Explain [drawStarFish\(\)](#) Quiz-Review

Lesson: [random numbers used in programming](#)

Explore Task: [APCSP Exam Page](#)

Words-of-Week (WoW):-

Abstraction: Pulling out specific differences to make one solution work for multiple problems.

Function: A piece of code that you can easily call over and over again.

Top-Down Design/Stepwise Refinement: is an informal way of repeatedly dividing a system into simpler subsystems.

API - a collection of commands made available to a programmer

Documentation - a description of the behavior of a command, function, library, API, etc.

Hexadecimal - A base-16 number system that uses sixteen distinct symbols 0-9 and A-F to represent numbers from 0 to 15.

Library - a collection of commands / functions, typically with a shared purpose

Parameter - An extra piece of information that you pass to the function to customize it for a specific need.

Date	HomeWork	ClassWork
10/27	Finish all pending work on Code.org U3_Ch.1-8 with challenge Qs and Google classroom.	Aim: Assess Learning and write functions with parameters Lesson: Create Functions w/Parameters Task: Quiz (Unit-3 Chs1-7) Explore Task: APCSP Exam Page
10/26	Review Quizlet Finish Ch.1-8 pending work on Code.org	Aim: Write functions with parameters to generalize a solution Activator: Explain different formats of assigning color to object Lesson: Create Functions w/Parameters
10/25	Finish pending work on Code.org	Aim: Define an API as the set of commands made available by a programming language. Activator: Top-Down Design Lesson: APIs & Functions w/Parameters Task: Using Parameterized Commands & Make a "snowman" Challenge: Draw whatever you like! The only requirements are use: 1) at least 3 different colors 2) use moveTo
10/24	Finish pending classwork	Aim: Use "top-down" approach to identify sub-tasks of a larger programming task Activator: Review Challenge-Qs Diamond Function Lesson: L06-Functions and Top-Down Design Task: Top-Down Design Lab: L6 Pzl-2-3 CYU: Pzl# 4-6
10/23	Finish pending classwork	Aim: Define & call simple functions to solve programming tasks Lesson: L05 - Creating and Calling Functions Task: Create & Call Functions Pzl. 3-9 CYU: Learning Checks 10-13

Words-of-Week (WoW):-

Algorithms: building blocks for solving computational problems

Computational Processes:- are the ones that can be executed by a computer - which have specific sets of constraints.

Programming Constructs:- Sequence, Selection, Iteration

Selection: also known as "branching" most commonly seen in if-statements -- The JUMP...IF command in the Human Machine Language is a form of selection. It gives us a way to compare two things (numbers) and take action if one thing was true.

Iteration: also known as "looping" -- The JUMP command in the Human Machine Language allows us to move to a different point in the program and start executing from there. This allows us to re-use lines of code, and this is a form of iteration or looping.

Sequencing: From the framework: "4.1.1B - Sequencing is the application of each step of an algorithm in the order in which the statements are given." Sequencing is so fundamental to programming it sometimes goes without saying. In our lesson, the sequencing is simply implied by the fact that we number the instructions with the intent to execute them in order.

Turtle Programming - a classic method for learning programming with commands to control movement and drawing of an on-screen robot called a "turtle". The turtle harkens back to early implementations in which children programmed a physical robot whose dome-like shape was reminiscent of a turtle.

Fri, 10/20	Complete Google-Classroom Unit-3 assignment(s)	Aim: Define and call simple functions to solve graphic problems (<i>Sequencing, selection, and iteration are building blocks of algorithms</i>) Activator: Differentiate between program & algorithm Login to Code.org and open U3L4. Video Lesson: L4-Use Simple Commands to draw an image in App Lab Lab: Complete Puzzles3-9 on Code.org and post Challenge-5 and on your webpage. Exit: If you could add one additional simple command, what would it be and why?
Thu, 10/19	Complete Google-Classroom Unit-3 assignment(s)	Aim: Write programs to create simple drawings with "turtle" Activator: What is the difference between Shift & Move? Review Solutions to HuML Challenges Lesson: L4-Using Simple Commands Task/Activity: Introduction to App Lab
Wed, 10/18	Complete Google-Classroom Unit-3 assignment(s)	Aim: Identify Sequencing, Selection and Iteration in a program Activator: What is Swap? How does it differ from SHIFT? Lesson: Introducing SWAP Task/Lab: Design an algorithm for "Min-to-Front" problem using SWAP. Answer Key
Tue, 10/17	Complete Lesson-3 activities on Code.org	Aim: Figure out clever ways to solve problems using HuML Activator: Use HuML to Find Min Google-Classroom List common programming structures used in HuML Lesson: Creativity in Algorithms Lab: Min-to-Front Using modified HuML
Mon, 10/16	Complete the worksheet and post on your class-page	Aim: SWBAT Formalize Human Machine Language (HuML) & Implement it for problem solving Activator: Google-Classroom Read Pg-1 Think-Pair-Share: Example Activity Lesson: Formalize Human Machine Language (HuML)

Lab: Using HuML [Find Min](#)

Exit Slip: Explain the term “The Art of Programming” w.r.t your Lab solution.

-- Weekend --

-- Weekend --

Fri,
10/13

[Min Card Algorithm-Key](#)
Complete all pending work

Aim: SWBAT Develop and finetune [Min Card Algorithm](#)

Activator: Padlet [Explain Computational processes](#)

Lesson: [L2](#):Find your partner and Continue working

[Online Cards](#) (Refrain from using the Sort option)

Thu,
10/12

[Chp-10 B2B Qs & Notes](#)
Read the Activity: Find Min Card Algorithm

Aim: SWBAT *Develop an algorithm to find the smallest playing card in a row of cards*

Activator: Discuss [U1-Ch.2 Test Answers](#)

Lesson: The Need for Algorithms [U3-Ch2](#)

Activity: [Find Min Card Algorithm](#)

Wed
10/11

[Chp-10 B2B Qs & Notes](#)

PSAT Sophomores & Juniors

Tue,
10/10

Complete [Unit-3 Chp-1 CFU](#)

Test U1-Ch2

The AP EXAM RELATED:

- [AP CSP SYLLABUS 1610508 V1.PDF](#)
- [APCSP-COURSE-OVERVIEW 2PAGES.PDF](#)
- [AP-CSP-STUDENT-TASK-DIRECTIONS.PDF](#)
- [AP-COMPUTER-SCIENCE-PRINCIPLES-COURSE-AND-EXAM-DESCRIPTION](#)
- [EXPLORE Performance Tasks Scoring Guidelines](#)
- [CREATE Performance Tasks Scoring Guidelines](#)

Challenge Yourself

- [Sign-up for 3rd Congressional App Challenge](#)
- [SCI-FI Tales about Tech-Savvy girls](#) Submissions Open until:- 01-15-2018

Links to Help you:-

- [Domain Name Systems](#)

- Binary Links: [A Binary Tetris Game](#), [Odometers](#) – Amazing site where you can see all three “odometers” running at once, Khan Academy – [converting Binary to Hex tutorial](#)
- [The Internet](#):- How it works?
- [Interesting Videos on Internet & Networking](#)