

AP Computer Science A

Summer Assignment 2018

Ms. Mundie

About AP Computer Science A:

In this course you will learn the **Java** language, one of the most popular languages in the world. In **Java** you will write programs using object-oriented design methodology. College credit can be earned by passing the end-course College Board exam with a score of a 4 or 5. Whether or not you ultimately choose to pursue computer science as a major in college, this course has tremendous value. Most college science, technology, engineering, and mathematics programs require students to take an introductory computer science course. This course can satisfy that credit, or at the very least give students a significant head start.

Special Note:

Your ultimate goal for this course is to score as high as possible on the **AP Computer Science A** Exam in May of 2019. Instead of spending time researching non-Java related topics, time is better spent getting a head start on **Java** programming. Your summer assignment is comprised of two components described below to be completed in any order. Both components should be completed before the first day of school and will count as a *formative assignment* grade for Quarter 1. I will periodically check my school email throughout the summer. Please feel free to contact me with any questions or concerns at tmundie@bcps.org.

Assignment:

Part 1 – Coding Component (approximately 8-10 hours)

- Go to [Code HS](#) to create a student account.
- To create an account, enter the following:
 - First Name
 - Last Name
 - Email Address – you may use your personal email **OR** use your “fake” school email *username@bcps.org* (replace *username* with your BCPS username, i.e. JAB123@bcps.org)
 - Password (choose a password and record it somewhere)
 - Confirm Password
 - Class Code: **739B**
- Begin Coding...complete the following sections:

JAVA PRETEST

INTRODUCTION TO PROGRAMMING IN JAVA WITH KAREL THE DOG

- I will track your progress in CodeHS throughout the summer.
- **OPTIONAL Coding Assignment:** If you would like to do additional coding in Java this summer, codecademy offers a short Java course comprised of 4 lessons (Introduction to Java, Conditionals

and Control Flow, Object-Oriented Java, and Data Structures). **Sign up for a free account at [Code Academy](#)**. This assignment is not required.

Part 2 – Reading Component (approximately 1-2 hours)

- **Go to [Green Tea Press](#)** and download a free copy of “*How to Think Like a Computer Scientist/ Think Java*” in pdf (version 6) by Allen B. Downey and Chris Mayfield (or access the online version).
- **Read:** Chapter 1 “*The Way of the Program*” **AND** Chapter 2 “*Variables and Operators*”
- **Answer the questions below.** You must create a *professional* word-processed document. At the top of the document, place *your name* and *AP Computer Science A – 2018 Summer Reading Assignment*. Copy and paste each question below onto your document followed by your **detailed** answer written in your own words and in complete, and grammatically correct, sentences or structured outline form. Print out your document (or email it to me). This assignment is due no later than the first day of school.

QUESTIONS

1. How is thinking like a computer scientist similar to the thinking involved in engineering and other sciences?
2. What is the single most important skill for a computer scientist?
3. What is programming? Describe the basic instructions contained in most programs.
4. Describe the differences between a **low level** and **high level** language?
5. What are the advantages of programming in a high level language?
6. What does **portable** mean?
7. What is a **compiler**?
8. What is **source code**?
9. What is **debugging**?
10. What is a **variable**? Describe three different types of Java variables.
11. What is a **keyword**?
12. What is the purpose of an **assignment statement**?
13. What is meant by a program’s **state**?
14. What are **operators**?
15. Describe the difference between the following two statements.

```
System.out.print();  
System.out.println();
```
16. Describe **escape sequences**.
17. Describe **rounding errors** encountered in programming.
18. What is the **concatenation** symbol and what is it used for?
19. List and described the three types of programming errors.

20. Background information:

- What are your personal goals for this course?
- Describe your programming experience aside from this summer assignment.
- What other computer languages have you worked with and what is your level of proficiency with each language (high, medium, low)?
- What are your future educational plans beyond high school (i.e. college, major of study, etc.)?
- List all AP courses you have taken prior to the upcoming school year and the AP score that you received.
- List all AP courses that you are scheduled to take during the 2018-2019 school year.
- If not already listed, what mathematics course(s) will you be enrolled in during the 2018-2019 school year?
- Give a list/description of the activities/interests in which you are involved in and out of school (aside from the courses you take).