AP COMPUTER SCIENCE A - PREPARING FOR THE PENDING EXCITEMENT OVER THE SUMMER

AP® Computer Science A Required Summer Opportunities for Enlightenment

The AP® Computer Science A course focuses on fundamental programming algorithms using the Java language. This summer assignment is a "most enjoyable" way to practice pre-requisite skills and introduce new content to help you transition more smoothly during the first week of the course.

THE SUMMER ASSIGNMENT ADVENTURE:

Congratulations! This is an adventure packed full of Enjoyable Learning Activities.   Your final submission will be a JOURNAL of collected information as described below.   This WORD DOCUMENT will contain a summary of all your efforts. Enjoy!!!

This assignment is worth 25 points in total. A Great way to KICK OFF the NEW SCHOOL YEAR.

ACTIVITY 1:   Explore the world of DEDUCTIVE & INDUCTIVE LOGIC:

A. Watch the YOUTUBE video: [Deductive Vs. Inductive Reasoning - YouTube](https://www.youtube.com/watch?v=mpjzIhr-h6M)
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> **JOURNAL ENTRY: Answer these questions:**
>
> 1. Give 2 Examples of Deductive Reasoning. Give 2 Examples of Inductive Reasoning.
> 2. What is the difference between Deductive and Inductive Reasoning?
> 3. Which (if either) do you think is more prevalent in Computer Programming? Why?

B. Go to your local library or book store (or perhaps you are lucky enough to already possess one of these books??!!!). Find a Children's Book in the **Encyclopedia Brown, Boy Detective series** by Donald J. Sobol. Read at least 3 stories and see if you can solve the mystery!

> **JOURNAL ENTRY: Answer this question:**
>
> 4. Write a brief summary (3 or 4 sentences) for each mystery you have read.

ACTIVITY 2: Introduction to COMPUTER PROGRAMMING TECHNIQUES

An ALGORITHM is a set of instructions or a step-by-step procedure to accomplish some task. In programming, we must always plan out our approach before we jump right into the CODING "FIRE".   To prepare for the task, we contemplate and design our approach. The SCRATCH -BLOCK CODE is a great tool for beginning this type of thought process. We build the Algorithm and then we convert it to CODE.

A. Programming: Scratch

- Visit the MIT Scratch programming site (https://scratch.mit.edu/)
- Click on the TUTORIALS (top left) and Click on the "GETTING STARTED" to get your bearings.
- Create 3 different types of programs:

> **JOURNAL ENTRY: Paste the Code for these programs: Capture a screenshot of your project code.**
>
> a. Create a MATH game in Scratch that calculates the hypotenuse of a right triangle given two legs.
> b. Create an Animation Game that makes a couple of Characters move or dance around.
> c. Create an ACTION Game that features a HERO and a VILLAIN.
> d.   Summarize the process that you used to create this program. What were the most intuitive steps? What were the most difficult challenging aspects? What did you learn in the process?

B. Programming: Introduction to Java

- Go to the CodingBat (https://codingbat.com/java) Java programming site.

JOURNAL ENTRY: Paste or WRITE OUT the CODE and COMMENTS for these programs:

1. Choose three problems from Warmup-1 (https://codingbat.com/java/Warmup-1) and solve them. It's ok to use the solution button!

2. With each solution, you need to add comments next to each line of the code. Comments are short notes throughout the code that summarize or explain the intent of the code. For each line of code, explain what the code is doing.   You might not be able to CODE yet, but using your innate intelligence, you can figure out what the CODE is doing. This is KEY.

3. There's likely a lot of code you don't understand or may not be able to interpret right away. Research the keywords such as public, Boolean, int, &&, ||, and !, <=, >=, String to be able explain what each means in your comments.

4. Cite all sources you used to help you find answers.

ONCE YOU HAVE COMPLETED ALL SECTIONS, YOU WILL HAVE A SINGLE COMPLETED JOURNAL (A WORD DOCUMENT). You will hand in a HARD COPY of this effort when the NEW SCHOOL YEAR BEGINS.

No journals will be accepted and no credit given after the Second FRIDAY of the NEW SCHOOL YEAR.

THINGS TO UNDERSTAND as you Prepare for this course in the FALL:

1. Majority of the CLASS is learning how to problem solve through hands-on programming:
   a. Min: 3-5 hours + Class Time: 10 hrs a week.
   b. 100 %   Java with several group Labs.
   c. You'll need a Computer at home that can run Java JDK & Blue-J.
   d. Time Management is KEY. You must invest in developing this skill.
   e. Plagiarism and just plain Cheating will be detrimental in many ways.
   f. Enjoy learning – Enjoy Thinking – Enjoy Puzzle Solving (Problem).
   g. AP EXAM is on paper- No Computer will be used

   "It's about thinking not just using a Computer to do your thinking."