



AP Computer Science A

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Course Description

The AP Computer Science A course covers topics typically found in a college-level first course in computer science, and provides a solid preparation for the AP Computer Science A examination. The course emphasis is on procedural abstraction, data abstraction, object-oriented design and programming methodology using the Java programming language, and the use of algorithms and data structures.

Major topical areas include:

- the concepts of computer science
- program control constructs
- use of arrays and strings
- class methods
- object-oriented design and programming concepts
- creating and modifying classes
- understanding existing designs and code
- the use of sorting and searching algorithms
- recursion
- use of standard Java class libraries

Highly qualified instructors guide students through video lectures, readings, forum discussions, design and programming exercises, project assignments, and other resources. Student knowledge is assessed through homework assignments, projects, and exams.

Programming Assignment:

Go to this website and download NetBeans onto your computer:

<https://netbeans.org/community/releases/82/install.html>

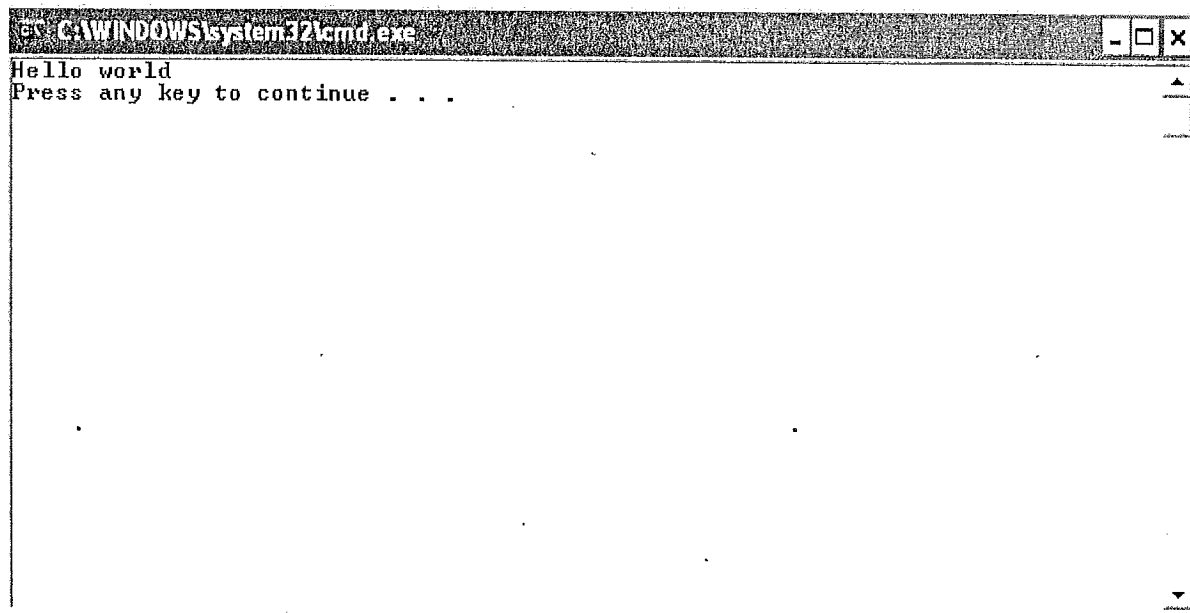


Assignment:

1. Type in the following program. Compile and run the program. When the program opens, press the Print Scrn button on your keyboard. This will take a "snapshot" of what is on your screen at the moment (think of it as a copy the screen, like you would press copy when you highlight text in Word.) Paste the image into a word document and print out the display.

```
public class SummerAssignmentProgram1
{
    public SummerAssignmentProgram1()
    {
        System.out.println("Hello world");
    }
    public static void main(String args[])
    {
        SummerAssignmentProgram1 app=new SummerAssignmentProgram1();
    }
}
```

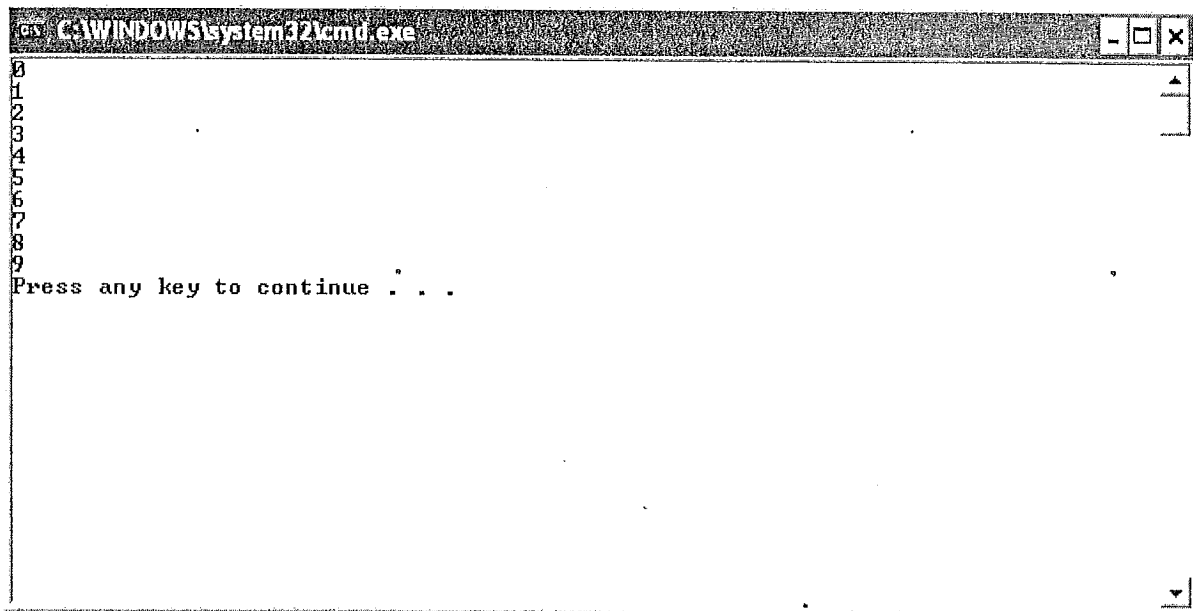
When finished, your code should look like the following:




```
2. public class SummerAssignmentProgram2
{
    public SummerAssignmentProgram2()
    {
        for(int x=0;x<10;x++)
            System.out.println(x);
    }

    public static void main(String args[])
    {
        SummerAssignmentProgram2 app=new SummerAssignmentProgram2();
    }
}
```

When finished, your code should look like the following:



The screenshot shows a Windows command prompt window titled "C:\WINDOWS\system32\cmd.exe". The window displays the output of the Java program, which is a list of integers from 0 to 9, one per line. Below the list, the prompt "Press any key to continue . . ." is visible. The window has standard Windows window controls (minimize, maximize, close) in the top right corner.

```
C:\WINDOWS\system32\cmd.exe
0
1
2
3
4
5
6
7
8
9
Press any key to continue . . .
```


3. Using the code from above as a template, write a program, in the simplest way possible, that will output the following. You are allowed no loops when you write the program.

```
*  
**  
***  
****  
*****
```

4. Rewrite the program above, but you are limited to the following two output statements. You are only allowed the following two output statements:

```
System.out.print("*");    //usable only once  
System.out.println();    //usable only once
```

Your code must use 2 loops and cannot have any other output statements than the two listed above. You can have no more than the two output statements that are shown above.

Important things to keep in mind:

1. Syntax is important!!! Java is a case sensitive language, so a variable defined as XXYY is different from XyXy.
2. The `//` are your way of commenting lines in your programs.
3. Unlike Pascal, Strings use double quotes not single quotes.
4. The braces `{` and `}` are the equivalent of begin and end in Pascal.
5. For now, the only changes in code should take place in the area between the two braces shown below.

```
public class SummerAssignmentProgram3
{
    public SummerAssignmentProgram3()
    {
        //Put Your Code Here! Don't change anything else.
    }

    public static void main(String args[])
    {
        SummerAssignmentProgram3 app=new SummerAssignmentProgram3();
    }
}
```

6. Here is an example of a nested for-loop structure. The word **for** and **int** must be all lower case. **int** is a variable type and is shorthand for Integer.

```
for(int x=0; x< 100; x++)
{
    for(int y=0;y<100;y++)
    {
    }
}
```

7. You will only need semi-colons at the end of your `System.out.println()` or `System.out.print()` lines of code.

AP Computer Science Summer Assignment Questions

Name: _____

Read Chapter 1 of "How to Think Like a Computer Scientist"

(<http://greenteapress.com/thinkajava/>) answer the following questions in complete sentences.

Assignment is due the first day of school and is a Formative grade. (continue on back if needed)

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. Describe the differences between a low level and high level language?

4. What are the advantages of programming in a high level language?

5. What does portable mean?

6. What language is used in AP Computer Science?

7. What is a compiler?

8. What is source code?

9. What is debugging?

10. What are your personal goals for this course?

