

AP Computer Science – Summer 2009 Assignment Package

Welcome to AP Computer Science for the 2009-2010 academic year. Please complete this assignment package and bring it with you to the first day of class in September. Please note: this assignment package consists of two parts. The first part covers boolean logic, and the second part covers computer ethics. You must complete both parts during the summer.

If you have questions about this package, you can email me at steve.ingrassia@fcps.edu and I'll respond within a few days. Be patient...there will be some days during the summer that I will not be accessing my email.

See you in the fall!

-Mr. Ingrassia

Checklist for September

- Did I complete both pages of the boolean logic section of this package?
- Did I complete my paper on computer ethics?
- Did I attach a copy of my news article to the paper?
- Am I prepared to discuss one of the 10 commandments of computer ethics on the first day of class?

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Part 1: Boolean Logic

Boolean logic is named after the 19th century British mathematician George Boole. Boolean logic describes the truth or falsehood of simple propositions or combinations of simple propositions using the operations **and**, **or**, and **not**.

Let **a** and **b** each represent any proposition that can be either true or false. The following tables formally define **and**, **or**, and **not**.

a	b	a and b
true	true	true
true	false	false
false	true	false
false	false	false

a	b	a or b
true	true	true
true	false	true
false	true	true
false	false	false

a	not a
true	false
false	true

In other words, both **a** and **b** have to be true for **a and b** to be true. If either one of them is false, then **a and b** is false. For **a or b** to be true, either **a** has to be true, or **b** has to be true, or both can be true.

We can combine any number of boolean values together, using **and**, **or**, and **not**. We use parentheses to indicate what should be done first.

The following page contains a number of problems for you to solve. In each case, you have to determine whether the overall statement is **true** or **false**. I've done the first two for you, so you can get an idea. You need to do the rest, then detach the sheet and bring it with you to the first day of class.

Turn in this page
(both sides) on the
first day of class!!!

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Turn in this page
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NAME: _____

Define the following variables:

- a is a boolean variable with a value of **true**
- b is a boolean variable with a value of **false**
- c is a boolean variable with a value of **true**
- x is an integer variable with a value of **5**
- y is an integer variable with a value of **2**
- z is an integer variable with a value of **-2**

Instructions: Determine whether each of these statements is true or false.
Write your answer in the space to the right of each statement.

1. $(x > y) \text{ or } (y > x)$	TRUE
2. $\text{not } (x > y)$	FALSE
3. a and b	
4. (a and b) and c	
5. a and (b and c)	
6. (a or b) or c	
7. a or (b or c)	
8. (not a) and (not b)	
9. (not a) or (not b)	
10. not (a and b)	
11. not (a or b)	
12. (not a) and (not c)	
13. (not a) or (not c)	
14. not (a and c)	
15. not (a or c)	
16. $(x > y) \text{ and } (y > z)$	
17. $(\text{not } (x > y)) \text{ and } (\text{not } (y > z))$	

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Define the following variables:

- a** is a boolean variable with a value of **true**
- b** is a boolean variable with a value of **false**
- c** is a boolean variable with a value of **true**
- x** is an integer variable with a value of **5**
- y** is an integer variable with a value of **2**
- z** is an integer variable with a value of **-2**

Instructions: Determine whether each of these statements is true or false.
Write your answer in the space to the right of each statement.

18. $(x > y)$ or $(y > z)$	
19. $(\text{not } (x > y))$ or $\text{not } (y > z)$	
20. $\text{not } ((x > y)$ or $(y > z))$	
21. a and $(\text{not } b)$ and c and $(x=5)$ and $(y=2)$	
22. a and $(\text{not } b)$ and c and $(x=5)$ and $(y=2)$ and $(z=5)$	
23. $(\text{not } a)$ or b or $(\text{not } c)$ or $(x=6)$ or $(y=0)$	
24. $(\text{not } a)$ or b or $(\text{not } c)$ or $(x=6)$ or $(y=0)$ or $(z=-2)$	
25. a and $((x > 0)$ or $(y > 0))$	
26. a and $((x < 0)$ or $(y > 0))$	
27. a and $((x > 0)$ or $(y < 0))$	
28. a or $((x > 0)$ and $(y > 0))$	
29. a or $((x > 0)$ and $(y < 0))$	
30. b and $((x > 0)$ or $(y > 0))$	
31. b and $((x < 0)$ or $(y > 0))$	
32. b and $((x > 0)$ or $(y < 0))$	
33. b or $((x > 0)$ and $(y > 0))$	
34. b or $((x > 0)$ and $(y < 0))$	

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Part 2: Computer Ethics

The Computer Ethics Institute publishes a list of 10 commandments of computer ethics, as follows:

1. Thou shalt not use a computer to harm other people.
2. Thou shalt not interfere with other people's computer work.
3. Thou shalt not snoop around in other people's files.
4. Thou shalt not use a computer to steal.
5. Thou shalt not use a computer to bear false witness.
6. Thou shalt not use or copy software for which you have not paid.
7. Thou shalt not use other people's computer resources without authorization.
8. Thou shalt not appropriate other people's intellectual output.
9. Thou shalt think about the social consequences of the program you write.
10. Thou shalt use a computer in ways that show consideration and respect.

Summer Assignment: Choose any one commandment. Find a news article (newspaper, magazine, website) that illustrates behavior that is in violation of the commandment. Write a short paper (2-3 pages) that includes the following elements:

- Clearly identifies the commandment you are referencing.
- Explains why you believe this commandment is important.
- Describes the behavior from your news article that is in violation of the commandment.
- Provides your opinion of the consequences of this behavior.
- Identifies a potential situation that a high school student could face that requires the student to make a decision related to this commandment. (This does not necessarily have to be the same type of behavior as in the news article; it just has to relate to the same commandment.)
- Describes the decision you would make in the situation described above, including why you would make that decision.

Your paper must be typed. You must also attach a copy of the news article that you are referencing. Bring the paper with you to the first day of class in September. Be prepared to discuss your commandment and your news article with the rest of the class.