

AP Computer Science A

Unit 3. Boolean Expressions. Programs

Programs 1 and 2 can be done after page 2 of the notes.

1. Newts cost 50 cents each if you buy 5 or less. If you buy more, they cost only 40 cents each. Complete the program so the user can enter an integer and it will display the correct cost.

2. The user enters an integer. If it is even, then print EVEN; otherwise print ODD. Also, if the number is divisible evenly by 5, print FIVE.

Programs 3 to 9 can be done after finishing the notes.

3. Write a program where the user enters a positive integer and the program prints one of the following three messages as appropriate.

___ is even and a multiple of three.

___ is odd and a multiple of three.

___ is not a multiple of three.

where the blank is replaced by the entered number.

For example:

Enter a positive integer.

14

14 is not a multiple of three

or

Enter a positive integer.

21

21 is odd and a multiple of three

4. Write a program where the user enters three doubles and the program displays them in order from smallest to largest. The three numbers do not have to be unique.

5. Write a program that calculates the cost of a phone call. The user enters a positive integer that indicates the length of the call. The first two minutes of a phone call cost a flat \$1.50. Minutes 3 to 10 cost 50 cents each. Each minute after 10 costs 25 cents each.

For example:

How many minutes is the call?

13

A 13 minute call costs 6.25

6. Write a program where the user enters the number of monkeys they want and their lucky number (the user's lucky number, not a monkey's). Monkeys normally cost \$5 each but if you order 20 or more, they only cost \$4 each. If your lucky number is a 7 or 17, then reduce the total cost by 10%.

For example:

```
How many monkeys?  
22  
What is your lucky number?  
13  
The monkeys cost $88.0
```

Another example:

```
How many monkeys?  
3  
What is your lucky number?  
17  
The monkeys cost $13.5
```

7. The user enters a positive integer.
- If number is a multiple of 3 or 5, and between 1 and 100 (inclusive), print A
 - If number is a multiple of 7 or 2, and less than or equal to 50, print B
 - If the number is less than 25 or greater than 200, print C
 - Always print X at the end.

For example:

```
Number?  
35  
ABX
```

Another example:

```
Number?  
101  
X
```

8. The user enters three strings and the program display either "Three of a kind", "Pair", or "All different" as appropriate. The program is case-insensitive.

9. The user enters three strings and the program display them in all lower-case letters and in alphabetical order.