

Homework #3 Solution

(Java Programming for Beginners - OnLine)

Note: You need to know the loops before you complete some of the problems here

3.1 Here is a listing of a program, which asks a user to enter his/her age. It will print:

- a) "You are a golden" if the entered age is 50 and
- b) "You are not so golden" otherwise.

```
import java.util.Scanner;

public class FirstJavaHello {
    public static void main(String[] args) {
        int yourAge;

        Scanner readInput = new Scanner(System.in);
        System.out.printf("How old are you?: ");
        yourAge= readInput.nextInt();
        if (yourAge == 50)
            System.out.printf("You are golden\n");
        else
            System.out.printf("You are not so golden\n");
    }
}
```

Modify the above program, so that it will print:

- a) "You are a kid" if the age is less than 13
- b) "You are a teenager" if the age is between 13 and 19
- c) "You are an adult" if greater than 19

Solution:

```
int yourAge;

Scanner readInput = new Scanner(System.in);
System.out.printf("How old are you?: ");

yourAge= readInput.nextInt();

//assumes yourAge is between 0 to 100
if (yourAge < 13)
    System.out.printf("You are a kid\n"); //0-12 are kid
else if (yourAge <= 19)
    System.out.printf("You are a teenager\n"); //13-19 are teenager
else
    System.out.printf("You are an adult\n"); //20-100 are adult
```

3.2 Here is a calculator program. The program gives a prompt and waits for user to enter a number, operator and another number and gives the output like this:

```
Type a number, operator, number --separated by a space: 12 + 34
12.00 + 34.00 = 46.00
```

```
int firstN;
int secondN;
char operator;

Scanner readInput = new Scanner(System.in);

System.out.printf("Type a number, operator, number --"
                  + "separated by a space: ");
firstN = readInput.nextInt();
operator = readInput.next().charAt(0);
secondN = readInput.nextInt();

if (operator == '+')
    System.out.printf("%d + %d = %d",
                      firstN, secondN, firstN + secondN);
else if (operator == '-')
    System.out.printf("%d - %d = %d",
                      firstN, secondN, firstN - secondN);
else if (operator == '*')
    System.out.printf("%d * %d = %d",
                      firstN, secondN, firstN * secondN);
else if (operator == '/')
    System.out.printf("%d / %d = %d",
                      firstN, secondN, firstN / secondN);
else if (operator == '%')
    System.out.printf("%d %% %d = %d",
                      firstN, secondN, firstN % secondN);
else
    System.out.printf("Unknown operator");
System.out.printf("\n\n");
```

Modify the above program, so that it will:

- Accept decimal numbers from the user instead of integers.
- Once the output is displayed, ask the user if they want to continue, if they say yes, then repeat the process

Solution:

```
float firstN;
float secondN;
char op;
char answer = 'y';

while (answer == 'y') {
```

```

Scanner readInput = new Scanner(System.in);

System.out.printf("Type a number, operator, number --"
                + "separated by a space: ");

firstN = readInput.nextFloat();
op = readInput.next().charAt(0);
secondN = readInput.nextFloat();

if (op == '+')
    System.out.printf("%5.2f + %5.2f = %5.2f",
                    firstN, secondN, firstN + secondN);
else if (op == '-')
    System.out.printf("%5.2f - %5.2f = %5.2f",
                    firstN, secondN, firstN - secondN);
else if (op == '*')
    System.out.printf("%5.2f * %5.2f = %5.2f",
                    firstN, secondN, firstN * secondN);
else if (op == '/')
    System.out.printf("%5.2f / %5.2f = %5.2f",
                    firstN, secondN, firstN / secondN);
else if (op == '%')
    System.out.printf("%5.2f %% %5.2f = %d",
                    firstN, secondN, (int) firstN % (int) secondN);
else
    System.out.printf("Unknown operator");
System.out.printf("\n\n");

//you first need to flush the buffer, which still has
//'\n' character due to pressing enter
readInput.nextLine();

System.out.printf("Continue? Type 'y' for yes: ");
answer = readInput.next().charAt(0);
}
System.out.printf("Thank you for using my calculator\n\n");

```

3.1 Ternary/conditional operator ?: works like if .. else.

Here is an example, which finds the maximum of two numbers. It shows how can it be written using if else, and ?: both.

```

int max, a = 10, b = 20; // get value for a and b from user

//using if else
if (a > b) {
    max = a;
}
else {
    max = b;
}

//using ternary operator
max = (a > b) ? a : b; // what is the value of max?

```

Re-write the above ternary operator code to find the max of three numbers, for example, a, b, and c. Bonus, declare a, b, and c as integer variable and ask the users to enter these three values instead of hard coding them. Also, ask the user to continue if they like to find max of another set of integers.

Hint: You need to daisy chain the conditions!

A sample interaction with the user would look like this:

```
Enter three integer numbers to find max of them--separated by a space:
12 45 90
The Max is: 90

Continue? Type 'y' for yes: y
Enter three integer numbers to find max of them--separated by a space:
34 3 9
The Max is: 34

Continue? Type 'y' for yes: y
Enter three integer numbers to find max of them--separated by a space:
90 1200 90
The Max is: 1200

Continue? Type 'y' for yes: n
Thank you for using my max program

Press any key to continue . . .
```

Solution:

```
int firstN;
int secondN;
int thirdN;
int max;

char answer = 'y';

Scanner readInput = new Scanner(System.in);

while (answer == 'y') {

    System.out.printf("Type three numbers -- "
        + "separated by a space: ");
    firstN = readInput.nextInt();
    secondN = readInput.nextInt();
    thirdN = readInput.nextInt();

    // using ternary operator
    max = (firstN > secondN) ? (firstN > thirdN) ? firstN : thirdN
        : (secondN > thirdN) ? secondN : thirdN;

    System.out.printf("The Max is: %d\n\n", max);

    // you first need to flush the buffer, which still has
```

```
        // '\n' character due to pressing enter
        readInput.nextLine();

        System.out.printf("Continue? Type 'y' for yes: ");
        answer = readInput.next().charAt(0);
    }
    System.out.printf("Thank you for using my calculator\n\n");
```