Tracing w/ Methods

Trace the following program by hand.

Assume that when prompted, the user will enter in **17 pieces of fruit and 7 team members**.

```
class FruitDispenser {

    private Scanner keyboard = new Scanner(System.in);

    public static void main(final String[] args) {
      new FruitDispenser().run();
    }

    public void run() {

        int numberPiecesFruit = integerFromUser("How many pieces of fruit are there? ");

        int numberTeamMembers =
            integerFromUser("How many team members are there other than you? ");

        int numberFruitPerMember = numberFruitPerMember(numberPiecesFruit, numberTeamMembers);

        int numberFruitRemaining = numberFruitRemaining(numberPiecesFruit, numberTeamMembers);

        System.out.println();

        displayFruitGiven(numberFruitPerMember);
        displayFruitRemaining(numberFruitRemaining);

    }

    private int integerFromUser(String prompt) {
        System.out.print(prompt);
        return keyboard.nextInt();
    }

    private int numberFruitPerMember(int totalFruit, int numMembers) {
        return totalFruit / numMembers;
    }

    private int numberFruitRemaining(int numberPiecesFruit, int numberTeamMembers) {
        return numberPiecesFruit % numberTeamMembers;
    }

    private void displayFruitGiven(int numFruit) {
        System.out.printf("Each group member gets %d pieces of fruit.%n", numFruit);
    }

    private void displayFruitRemaining(int numFruit) {
        System.out.printf("There are %d pieces of fruit remaining.%n", numFruit);
    }

}
```

Tracing w/ Methods

Trace the following program by hand from the **String characterClass =** … statement in **run()**.

Assume that when prompted, the user will enter in **“accountant”** when asked for their class.

```java
class DndDamageCalculator {

    private final Scanner kbd = new Scanner(System.in);

    private static final String DEFAULT_CLASS = "Fighter";
    private static final int DEFAULT_LEVEL = 1;
    private static final int DEFAULT_STR = 9;
    private static final int DEFAULT_DEX = 9;

    public DndDamageCalculator() { }

    public static void main(final String[] args) {
        new DndDamageCalculator().run();
    }

    public void run() {
        <== code ==>

        String characterClass = characterClassOrDefaultFromUser();

        <== code ==>
    }

    private void displayWelcome() {
        System.out.println("Welcome to the DnD Damage Calculator.");
    }

    private String characterClassOrDefaultFromUser() {
        final String prompt = "What is the character's class " +
            " [(C)leric, (F)ighter, (R)ogue, (W)izard ]? ";

        char response = characterFromUser(prompt);

        if (!isAllowableCharacterClass(response)) {
            displayDefaultClassWarning(response);
        }

        return fullCharacterClass(response);
    }

    private char characterFromUser(final String prompt) {
        System.out.print(prompt);

        return kbd.nextLine().charAt(0);
    }

    private boolean isAllowableCharacterClass(final char abbrevCharClass) {
        return true;
    }

    private void displayDefaultClassWarning(final char invalidResponse) {
        final String msg = "\t'" + invalidResponse + "' is not a valid " +
            " character class. Using the default of " + DEFAULT_CLASS +
            " instead.";
        System.out.println(msg);
    }

    private String fullCharacterClass(final char abbrevCharClass) {

        String fullClass = "Invalid Character Class";
        return fullClass;
    }
```