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import java.util.ArrayList;
import java.util.Arrays;
import java.util.Random;
import java.util.Scanner;

public class PD_Mexico {
    // A standard Scanner object to acquire input
    static Scanner sc = new Scanner(System.in);
    // A random object
    static Random rand = new Random();
    // Holds if the amount of allowed rolls has been declared
    static boolean chosenPermittedRolls = false;

    // The initial lives of all players
    static int[] lives = { 6, 6, 6 };
    // Holds all the possible roll values in a descending order of value
    static ArrayList<Integer> order = new ArrayList<Integer>(
        Arrays.asList(21, 66, 55, 44, 33, 22, 11, 65, 64, 63, 62, 61,
54, 53, 52, 51, 43, 42, 41, 32, 31));
    static int currentPlayer = 0;

    // Main method
    public static void main(String[] args) {
        // A small greeting
        System.out.println("=====\nWelcome to
((MEXICO))\n=====");
        // Continues until 2 players have no lives left
        while ((lives[0] > 0 && lives[1] > 0) || (lives[0] > 0 && lives[2]
> 0) || (lives[1] > 0 && lives[2] > 0)) {
            // Holds the roll results
            int[] rollResults = new int[3];
            // Sets the current allowed rolls to 3
            int permittedRolls = 3;
            // Resets the chosen allowed rolls back to false
            chosenPermittedRolls = false;
            // Loops through each move
            for (int player = 0; player < 3; player++) {

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        int realPlayer = player;
        if (player != -1) {
            // Gets the starting player from the last
currentPlayer

            realPlayer = (player + currentPlayer) % 3;
        }
        // Only executes if the player is still alive
        if (!(lives[realPlayer] < 1)) {
            // Set the allowed rolls to the result of the
processing function

            permittedRolls = getPlayerRolls(realPlayer,
permittedRolls, rollResults);
            // Print their roll result and end their turn.
            System.out.printf("> Player [%d] ended this turn with
a roll of %d!\n", realPlayer + 1,
                rollResults[realPlayer]);
            System.out.println();
        }
    }
    // Calculates the currentPlayer of the round
    currentPlayer = calculateLoser(rollResults);
    // Handles if the players didn't get a tie
    if (currentPlayer != -1) {
        // Decreases a life from the currentPlayer
        lives[currentPlayer]--;
        // Shows the players the round's loser and their remaining
lives

        System.out.printf(
            "===> Player [%d] lost this round with a roll of
%d. They now have %d live(s) left. <==\n\n\n",
            currentPlayer + 1, rollResults[currentPlayer],
lives[currentPlayer]);
    }
}

// When there is only one alive player, print who it is
printWinner();
}

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/**
 * Calculates the result of player rolls in a given turn
 *
 * @param player      The current player
 * @param permittedRolls The number of permitted rolls
 * @param rollResults  The results of the round's rolls
 * @return The number of permitted remaining rolls
 */
private static int getPlayerRolls(int player, int permittedRolls,
int[] rollResults) {
    // Quits short circuit variable
    boolean quitFlag = false;
    // Loops through the amount of allowed rolls
    for (int roll = 1; roll <= permittedRolls && !quitFlag; roll++) {
        // Gets a random roll result as if we rolled a dice
        int rollResult = getRandomRoll();
        // Prints the roll
        System.out.printf("Player [%d] roll: %d. You have %d roll(s)
left.\n", player + 1, rollResult,
        permittedRolls - roll);
        // If we haven't reached the limit of our rolls...
        if (roll != permittedRolls) {
            // Asks if the user wants to roll again
            System.out.print("Are you happy with this roll? 1 = YES/0
= NO ");

            // Gets their choice
            int wantQuit = sc.nextInt();
            // If they want to quit...
            if (wantQuit == 1) {
                // Sets their roll result to their current roll
                rollResults[player] = rollResult;
                // If the allowed rolls hasn't been chosen yet...
                if (!chosenPermittedRolls) {
                    // Sets the allowed rolls to the amount of rolls
used

                    chosenPermittedRolls = true;

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        permittedRolls = roll;
    }
    quitFlag = true;
}
} else {
    // If they run out of rolls, sets their roll result to
their current roll
    // without asking
    rollResults[player] = rollResult;
}
}
// Sets allowed rolls to make sure the first player doesn't have
any issues
if (!chosenPermittedRolls && !quitFlag) {
    chosenPermittedRolls = true;
    permittedRolls = 3;
}
// Return the amount of allowed rolls
return permittedRolls;
}

/**
 * Calculates the loser of a round using provided results
 *
 * @param rollResults: The results of each player's roll
 *
 * @return the index of the losing player
 */
private static int calculateLoser(int[] rollResults) {
    // Calculates the index of a roll in the score list. The lowest
index has the
    // highest score
    int[] index = { order.indexOf(rollResults[0]),
order.indexOf(rollResults[1]), order.indexOf(rollResults[2]) };
    // Sets the currentPlayer to a garbage variable for the start
    int currentPlayer = -1;
    // Gets the worst roll as the max of the indices of the list

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        int losingScore = Math.max(Math.max(index[0], index[1]),
index[2]);
        // List of all the losingPlayers
        ArrayList<Integer> losingPlayers = new ArrayList<Integer>();
        // Loops through all the players
        for (int player = 0; player < 3; player++) {
            // Add a player to the losingPlayers list if they have the
lowest score
            if (index[player] == losingScore) {
                losingPlayers.add(player);
            }
        }
        // Handles the possible cases of losingPlayers
        switch (losingPlayers.size()) {
            // If all the players rolled the same roll
            case 3:
                System.out.println("This round was a draw!\n\n");
                break;
            // If two players rolled the same roll, decide randomly
            case 2:
                System.out.printf(
                    "Player [%d] and player [%d] have tied! The
currentPlayer is decided by a random coin flip...\n",
                    losingPlayers.get(0) + 1, losingPlayers.get(1) + 1);
                currentPlayer = losingPlayers.get(rand.nextInt(2));
                System.out.printf("Player [%d] lost the coin flip!
Unlucky.\n", currentPlayer + 1);
                break;
            // This would mean there is only one player who rolled the lowest
score, so
            // returns them
            default:
                currentPlayer = losingPlayers.get(0);
                break;
        }
    }

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        // Returns the currentPlayer to the caller
        return currentPlayer;
    }

    /**
     * Prints the winner from the amount of lives players have left.
     */
    private static void printWinner() {
        // Loops through the players
        for (int player = 0; player < 3; player++) {
            // Print that a player is alive if they have more than 0 lives
            if (lives[player] > 0) {
                System.out.printf("=====> Player [%d] is the winner!!
Thanks for playing. <=====-", player + 1);
            }
        }
    }

    /**
     * Produces a random dice roll between 1 and 6
     *
     * @return An integer value from 1 to 6 inclusive
     */
    private static int getRandomRoll() {
        // Get the first roll (1-6)
        int dice1 = rand.nextInt(6) + 1;
        // Get the second roll (1-6)
        int dice2 = rand.nextInt(6) + 1;
        // Calculate the roll result from which roll is higher.
        return dice1 > dice2 ? dice1 * 10 + dice2 : dice2 * 10 + dice1;
    }
}

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