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/*
Name: Zainulabdin Bughio
ICS4UA.3
Code name: magic number guesser
*/
import java.util.Scanner;
import java.util.Random;//leanred about it online
class Main {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);//makes a new scanner
      Random random = new Random();
      int num = random.nextInt(10) + 1;//grabs a number from 1-10
      System.out.println("take your guess at the number(between 1 and 10)");
      int number = scanner.nextInt();
      scanner.nextLine();
      int i = 1;
      while(number!=num){//if they do not equal then asks the user if they would like to keep
guessing
         System.out.println("your guess is wrong, would you like to guess again");
         String checker = scanner.nextLine().toUpperCase();
         if(checker.contains("YES")){//if user says yes then allows them to take a guess
            System.out.println("take your guess at the number");
            number = scanner.nextInt();
            scanner.nextLine();
            i++;
            if(number==num){//displays information if the guess is correct
               System.out.println("the magic number was " + num);
               System.out.println("your guess is correct");
               System.out.println("total number of guesses is " + i);
               break;
            }else if(number<num){//tells if the guess is too high or too low
               System.out.println("guess is too low");

            }else if( number>num){
               System.out.println("guess is too high");
            }
         }else if(checker.contains("NO")){//if the user quits, it tells the user the correct number and
breaks loop
            System.out.println("you decided to quit, correct number was " + num);
            break;
         }
      }
      if(num==number && i==1){//if the user gets it first try and on the first turn
         System.out.println("you got it right with the first guess");
```

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      }

   }
}


/*
Name: Zainulabdin Bughio
ICS4UA.3
Code name: turtoise vs hare race
*/
import java.util.Scanner;
import java.util.Random;
class Main {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);//makes a new scanner
      Random random = new Random();
      System.out.println("the annual race is here!");
      System.out.println("how long do you want the race to be(just a number)");
      int length = scanner.nextInt();
       while(length<=5){//makes sure the race is not too short
         System.out.println("race is too short, enter a new number");
         length = scanner.nextInt();

      }
      System.out.println("the length of the race is " + length +" units");
      double tposition = 0;//inital position and speed of the hare and turtoise
      double hposition = 0;
      double tspeed = 0;
      double hspeed = 0;
      int turn = 1;
      while(tposition<length || hposition<length){//loop works when no one is at finish line
         tspeed = random.nextDouble()*5;//since nextDouble only gets something till 1, scale it
up by multiplying by 5
         hspeed = random.nextDouble()*5;
         int tsign= random.nextBoolean() ? 1: -1;//random boolean to see if we are going to use a
positive or a negative speed
         int hsign= random.nextBoolean() ? 1: -1;//random boolean to see if we are going to use
a positive or a negative speed

         tspeed = tspeed * tsign;
         hspeed = hspeed * hsign;

         tposition += tspeed;
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            hposition += hspeed;
            System.out.println("turn " + turn);
            turn++;
            System.out.println("the turtoise's speed is " + tspeed);
            System.out.println("the hare's speed is " + hspeed);
            if(tspeed<0){//prints if they are going forawrd or backwards
               System.out.println("turtoise goes backwards");
            }else{
               System.out.println("turtoise goes forward");
            }
            if(hspeed<0){
               System.out.println("hare goes backwards");
            }else{
               System.out.println("hare goes forward");
            }
            System.out.println("the turtoise's position is " + Math.round(tposition));
            System.out.println("the hare's position is " + Math.round(hposition));//rounds position
             if(tposition >=length){//if one of them wins the race
                 System.out.println("the turtoise won");
                 break;
             }else if(hposition >= length){
                 System.out.println("the hare won");
                 break;
             }

        }


    }
}


/*
Name: Zainulabdin Bughio
ICS4UA.3
Code name:  coin tosser with user input
*/

import java.util.Scanner;
import java.util.Random;
class Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        Random random = new Random();
```

```
        System.out.println(" how many times do you want to toss the coin");
        int toss = scanner.nextInt();
        int i = 0;
        int counter = 0;
        int head = 0;
        int tail = 0;
        while(i<toss){//tosses the coin as many times as asked
            int a = random.nextInt(2) + 1;//random number between 1 and 2
            if(a==1){// 1 = heads to it adds to the counter and the counter of heads
              counter++;
              head++;

            }else if(a==2){// 2 = tails so it adds to tails counter and subtracts from the final counter
                counter--;
                tail++;
            }
            i++;
        }
        System.out.println("coin was tossed " + toss + " times and the counter is " +
counter);//prints information
        System.out.println("head showed up " + head);
        System.out.println("tails showed up " + tail);

    }
}
```