

Solution with guideline for assignment 2 checking

Three loops are required:

1. For play again option (Game start with message "Press any key to continue or Q to quit"), therefore, input in the start is required followed by while loop and another input at the end of loop.
2. Continue till marbles greater than zero while (totalMarbles>0)
3. For valid input a do-while loop required

In case no function used, deduct 1 mark. If both players are handled separately deduct 1 mark, there will be repetition in code, can be avoided just taking a variable to store current player and switching by checking if (p==1) p=2 else p=1. Remaining deduction is on other deficiencies like improper check or missing functionality.

```
import java.util.*;
class Assignment02{
    public static int input(int totalMarbles){
        Scanner in=new Scanner(System.in);
        int inputMarbles=1, halfMarbles;
        do{
            halfMarbles=totalMarbles/2;
            if (halfMarbles==0) halfMarbles=1;
            ?("\tEnter Number of marbles between 1 to "+halfMarbles+":");
            inputMarbles=in.nextInt();
            if (inputMarbles<1 || inputMarbles>halfMarbles)
                ?ln("\t\t\t\t\tKindly enter marbles within range");
        }while(inputMarbles<1 || inputMarbles>halfMarbles);
        return inputMarbles;
    }
    public static void playNim(){
        int totalMarbles=(int)(Math.random()*30+20);
        ?ln("\t\t\tTotal Marbles are:"+totalMarbles);
        ?ln("\tEach player will select 1 to half of the remaining marbles in
turn.\n");
        int turn=1, inputMarbles;
        do{
            ?ln("Player "+turn+" turn:");
            inputMarbles=input(totalMarbles);
            totalMarbles=totalMarbles-inputMarbles;
            ?ln("Remaining Marbles:"+totalMarbles);
            if (turn==1) turn=2;
            else turn=1;
        }while(totalMarbles>0);
        ?ln("\tPlayer "+turn+" won the game");
    }
    public static void nimGame(){
        String choice;
        Scanner in=new Scanner(System.in);
        ?ln("\t\t\t Welcome to NIM Game\n");
        do{
            ?("\t\tPress any key to start new game or Q to Quit: ");
            choice=in.next();
            if (!choice.equals("Q") && !choice.equals("q"))
                playNim();
        }while(!choice.equals("Q") && !choice.equals("q"));
    }
    public static void main(String args[]){
        nimGame();
    }
}
```