
Odds v Evens Toy Code

Table of Contents

Document Info	1
Conditions	1
Cheating Settings	1
Choosing Odd or Even	1
Throwing Numbers	2
Deciding Winner	2
Scoreboard	3

Document Info

```
% Written by: Drew Christner
% Class: MAE 215 Assignment 7 Part 1
% Date: 4 March 2021
```

Conditions

```
num_runs = 1000 ; %USER DEFINED
games = (1:num_runs+1); % variable for # games played used for
plotting
A_odd_percent = .5 ; % percentage (in decimal form) of the time A
picks odds
A_finger_percent = .5 ; % percentage (in decimal form) of the time A
throws 1 finger
B_finger_percent = .5 ; % percentage (in decimal form) of the time B
throws 1 finger
A_score = zeros(1,num_runs) ; % matrix of zeros w/ length num_runs
B_score = zeros(1,num_runs); % matrix of zeros w/ length num_runs
time = 1 ;
```

Cheating Settings

```
blueshell = 1 ; % 1 = on ; 0 = off.
lead = 3 ;
handicap = 0.04 ;
```

Choosing Odd or Even

```
while num_runs > 0 % begins while loop that lasts for num_runs

    time = time + 1 ; % time vector increases each game
    num_runs = num_runs - 1 ; % num_runs decreases each game
```

```
    if blueshell == 1
    if A_score >= B_score
    A_odd_percent = A_odd_percent + handicap ;
    A_finger_percent = A_finger_percent - handicap ;
    B_finger_percent = B_finger_percent - handicap ;

    else if B_score >= A_score
    A_odd_percent = A_odd_percent + handicap ;
    A_finger_percent = A_finger_percent + handicap ;
    B_finger_percent = B_finger_percent + handicap ;
    end
    end

end
A_pick = rand ; % random number that A pick to determine odd or even
if A_pick >= A_odd_percent % A chooses odd or even based on odd % and
    rand
    A_side = 0 ; % even
else
    A_side = 1 ; % odd
end
end
```

Throwing Numbers

```
A_throw = rand ; % random number that A pick to determine # of fingers
if A_throw >= A_finger_percent % A chooses 1 or 2 fingers based on
    finger % and rand
    A_finger = 2 ; % A throws 2 fingers
else
    A_finger = 1 ; % A throws 1 finger
end

B_throw = rand ; % random number that B pick to determine # of fingers
if B_throw >= B_finger_percent % B chooses 1 or 2 fingers based on
    finger % and rand
    B_finger = 2 ; % B throws 2 fingers
else
    B_finger = 1 ; % B throws one finger
end

total = A_finger + B_finger ; % sums the number of fingers thrown
```

Deciding Winner

```
switch total % begin switch based on value of "total"
case 2 % when total = 2
    if A_side == 0 % if A is even
        A_score(time) = A_score(time-1) + 1 ; % A wins
        B_score(time) = B_score(time-1) + 0 ;
    else % if A is odd
        A_score(time) = A_score(time-1) + 0 ;
        B_score(time) = B_score(time-1) + 1 ; % B wins
    end
end
```

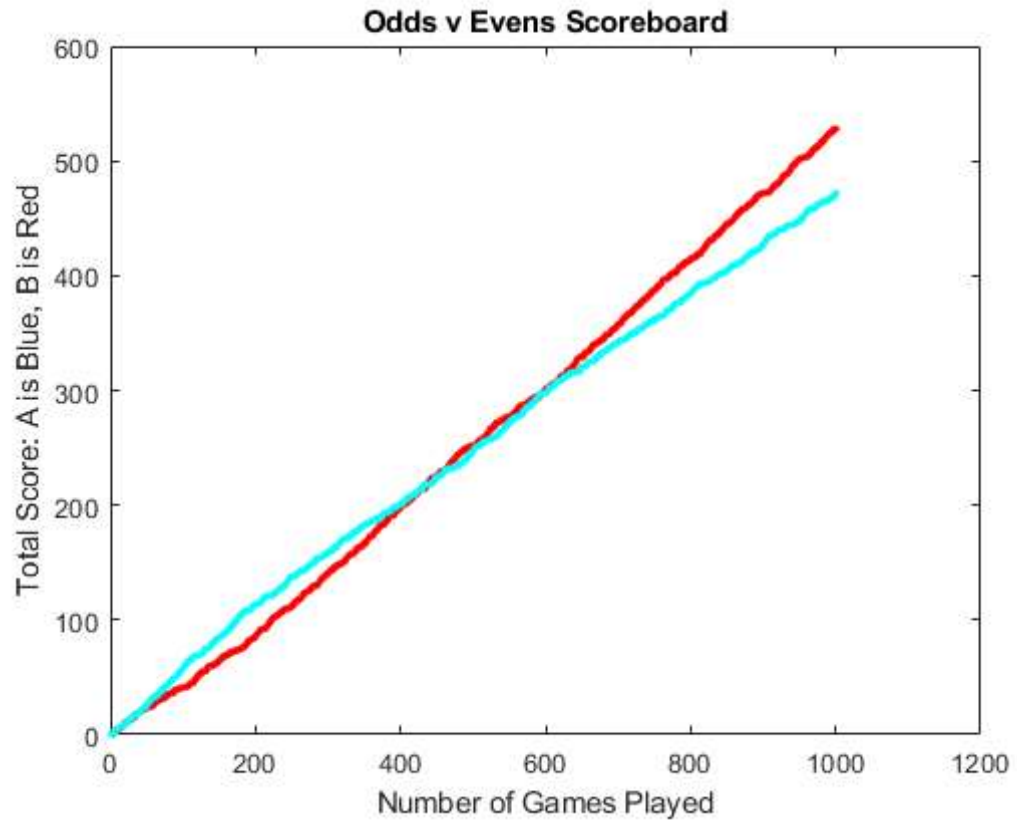
```
end
case 3 % when total = 3
    if A_side == 0 % if A is even
        A_score(time) = A_score(time-1) + 0 ;
        B_score(time) = B_score(time-1) + 1 ; % B wins
    else % if A is odd
        A_score(time) = A_score(time-1) + 1 ; % A wins
        B_score(time) = B_score(time-1) + 0 ;
    end
case 4 % when total = 4
    if A_side == 0 % if A is even
        A_score(time) = A_score(time-1) + 1 ; % A wins
        B_score(time) = B_score(time-1) + 0 ;
    else % if A is odd
        A_score(time) = A_score(time-1) + 0 ; %B wins
        B_score(time) = B_score(time-1) + 1 ;
    end
end
end
end
```

Scoreboard

```
figure
plot(games,B_score,'r.') ; hold on
plot(games,A_score,'c.') ; hold on
xlabel('Number of Games Played')
ylabel('Total Score: A is Blue, B is Red')
title('Odds v Evens Scoreboard')
% creates new figure and plots both scores with respect to # of games
% played. A is blue, B is red, both plottes as dots.

if A_score(time) > B_score(time)
    fprintf('The Winner is: Player A ')
elseif B_score(time) > A_score(time)
    fprintf('The Winner is: Player B ')
else
    fprintf('Its a Draw!')
end
% Writes in command window who the winner is based on highest score or
a
% draw

The Winner is: Player B
```



Published with MATLAB® R2020b