Contents


```
% ------------------------------------------------------------------------
% Date       : 26/01/2026
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%
% Title      : Tambola (Housie) Ticket Generator
%
% Description:
% This program generates a valid Tambola ticket (3×9 matrix) such that:
%  - Each row contains exactly 5 numbers
%  - Each column contains 1 to 3 numbers
%  - Numbers fall within standard Tambola column ranges
%  - Numbers in each column are sorted in ascending order
% ------------------------------------------------------------------------

clc;
clear;
close all;
```

---------- STEP 1: STRUCTURE MATRIX ----------

M is a 3x9 binary matrix 1 → number exists at that position 0 → empty cell

```
M = zeros(3,9);
```

---------- ENSURE EACH COLUMN HAS AT LEAST ONE ENTRY ----------

```
for col = 1:9
    row = randi(3);          % Randomly choose a row (1–3)
    M(row, col) = 1;
end
```

---------- ENSURE EACH ROW HAS EXACTLY 5 ENTRIES ----------

```
for row = 1:3
    while sum(M(row,:)) < 5
        col = randi(9);      % Random column
        if M(row,col) == 0
```

```
            % Ensure column does not exceed 3 numbers
            if sum(M(:,col)) < 3
                M(row,col) = 1;
            end
        end
    end
end

disp('Tambola Structure Matrix (M):');
disp(M);
```

```
Tambola Structure Matrix (M):
     1     0     1     1     0     1     0     0     1
     1     1     0     1     0     0     1     1     0
     1     0     1     0     1     0     1     0     1
```

---------- STEP 2: NUMBER ASSIGNMENT ----------

Initialize final ticket matrix

```
Ticket = zeros(3,9);

for col = 1:9
```

Column-wise number ranges (Tambola rules)

```
    if col == 1
        start = 1;    endv = 9;
    elseif col == 9
        start = 80;   endv = 90;
    else
        start = (col-1) * 10;
        endv  = start + 9;
    end
```

Count how many numbers are needed in this column

```
    count = sum(M(:,col));
```

Generate unique random numbers from the column range

```
    numbers = start:endv;
    numbers = numbers(randperm(length(numbers)));
    numbers = numbers(1:count);
```

Manual ascending sort (Bubble Sort)

```
    for i = 1:count
        for j = 1:count-i
            if numbers(j) > numbers(j+1)
                temp = numbers(j);
```

```
                numbers(j) = numbers(j+1);
                numbers(j+1) = temp;
            end
        end
    end
```

Assign numbers top to bottom according to structure matrix

```
    idx = 1;
    for row = 1:3
        if M(row,col) == 1
            Ticket(row,col) = numbers(idx);
            idx = idx + 1;
        end
    end
```

```
end
```

---------- FINAL OUTPUT ----------

```
disp('Final Tambola Ticket:');
disp(Ticket);

% ------------------------------------------------------------------------
% End of Program
% ------------------------------------------------------------------------
```

```
Final Tambola Ticket:
     4     0    20    31     0    57     0     0    87
     6    17     0    36     0     0    61    76     0
     7     0    23     0    45     0    67     0    89
```

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