

Computer Programming
Bachelor in Biomedical Engineering
Bachelor in Applied Mathematics and Computing
Course 2020 / 2021

Exercise Sheet 3 Extra - SOLUTIONS
MATLAB Syntax

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Exercise 1

Write a program for a casino roulette game. A roulette has 37 places numbered from 0 to 36. 0 is green and the numbers 1, 3, 5, 7, 9, 12, 14, 16, 18, 19, 21, 23, 25, 27, 30, 32, 34, and 36 are red. All the other numbers are black.

Consider that players can bet on:

- A single number (1 to 36)
- Red versus Black
- Odd versus Even
- 1 to 18 versus 19 to 36

The program asks the user to introduce the number on which the roulette wheel stopped, and displays all the bets that must be paid.

In case the number is 0 the program only displays the sentence “Pay 0”.

Example of execution:

Introduce the number: 7

Pay 7

Pay red

Pay odd

Pay 1 to 18

SOLUTION

```
clear;
number = input('Introduce the number: ');

if(number == 0)
    disp('Pay 0');
else
    fprintf('Pay %d\n', number);
    %black vs red
    if(number == 1) || (number == 3) || (number == 5) || (number ==
7) ...
        || (number == 9) || (number == 12) || (number == 14) ||
(number == 16) ...
        || (number == 18) || (number == 19) || (number == 21) ||
(number == 23) ...
        || (number == 25) || (number == 27) || (number == 30) ||
(number == 32) ...
        || (number == 34) || (number == 36)
        disp('Pay red');
    else
        disp('Pay black');
    end
    %odd vs even
    ebet = rem(number, 2);
    if(ebet == 0)
        disp('Pay even');
    else
        disp('Pay odd');
    end
    %smaller than 18 vs not
    if (number <= 18)
```

```
        disp('Pay 1 to 18');
    else
        disp('Pay 19 to 36');
    end
end
```

SOLUTION using 'switch'









```
clear;
number = input('Introduce the number: ');

if(number == 0)
    disp('Pay 0');
else
    fprintf('Pay %d\n', number);
    %black vs red
    switch(number)
        case {1, 3, 5, 7, 9, 12, 14, 16, 18, 19, 21, 23, 25, 27, 30,
32, 34, 36}
            disp('Pay red');
        otherwise
            disp('Pay black');
    end
    %odd vs even
    ebet = rem(number, 2);
    if(ebet == 0)
        disp('Pay even');
    else
        disp('Pay odd');
    end
    %smaller than 18 vs not
    if (number <= 18)
        disp('Pay 1 to 18');
    else
        disp('Pay 19 to 36');
    end
end
```

Exercise 2

Write a program that plays ‘Guess who’ with the user. The program must be able to determine which character the user had in mind by asking the three following questions:

- Is it a boy or a girl?
- Is it wearing glasses?
- Is it wearing a hat?

			
A.- Mike	B.- Emily	C.- Sarah	D.- David
			
E.- Ben	F.- Mary	G.- John	H.- Emma

Example of execution:

Is it a boy or a girl?: (f/m) **f**
 Is it wearing glasses?: (y/n) **y**
 Is it wearing a hat?: (y/n) **y**
 You were thinking of character H!

SOLUTION

```
clear;
gender = input('Is it a boy or a girl?: (f/m) ','s');
glasses = input('Is it wearing glasses?: (y/n) ','s');
hat = input('Is it wearing a hat?: (y/n) ','s');

if(gender == 'f')
    if(glasses == 'y')
        if(hat == 'y')
            id = 'H';
        else
            id = 'C';
        end
    else
        if(hat == 'y')
            id = 'B';
        else
            id = 'F';
        end
    end
else
    if(glasses == 'y')
        if(hat == 'y')
```

```
        id = 'D';
    else
        id = 'E';
    end
else
    if(hat == 'y')
        id = 'A';
    else
        id = 'G';
    end
end
end
fprintf('You were thinking of character %c!\n', id);
```