

# Loop structures (while and for)

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## 1. Dice rolls

a)

Write a program that counts how many dice rolls are needed to get a 6. Use **while** statement.

### Dice rolls (while loop)

Roll dice

It took 2 rolls to get a 6.

#### Hints

- The idea of the code is:

```
initialize the count variable to one (let count = 1)
roll the die (let die = Math.floor((Math.random() * 6) + 1))
while (die is not equal to 6) {
    increase the count variable by one
    roll the die
}
show the answer
```

b)

Write a program that rolls dice 50 times and tells how many times the number 6 appeared. Use **for** statement.

### Dice rolls (for loop)

Roll 50 dice

Number of sixes in 50 rolls: 8 (16%)

#### Hints

- The idea of the code is:

```
initialize the lkm variable to zero
for (var i=1; i<=50; i++) {
    roll the die
    if (die == 6)
        increase the lkm variable by one
}
show the answer
```

## 2. Insurance

Write a program that displays the insurance payment installments.

### Insurance Installments

Insurance payment (€):

Number of installments:

Show Installments

1. 146.60€  
2. 146.60€  
3. 146.60€  
4. 146.60€  
5. 146.60€

#### Hints

- The idea of the code is:

```
calculate the amount of a single installment
initialize a text variable as an empty string
for numberOfInstallments {
    add a line of text to the text variable
}
show the answer
```

- A single installment is calculated `insurancePayment / numberOfInstallments`

## 3. Credit

Write a program that asks for the price of a purchase made on credit and the number of installment months.

The program prints the amount to be paid each month and the remaining credit after each month.

## Credit installments

Purchase price (€):

Number of months:

Show installments

Month 1: Payment 166.50 €, remaining credit: 832.50 €  
Month 2: Payment 166.50 €, remaining credit: 666.00 €  
Month 3: Payment 166.50 €, remaining credit: 499.50 €  
Month 4: Payment 166.50 €, remaining credit: 333.00 €  
Month 5: Payment 166.50 €, remaining credit: 166.50 €  
Month 6: Payment 166.50 €, remaining credit: 0.00 €

## 4. Savings

Write a program that shows the growth of savings.

The program asks for the savings goal, the monthly saving amount, and shows how the savings grow.

## Savings growth

Savings goal (€):

Monthly saving (€):

Show Savings Growth

Month 1: Saved 150.00 €  
Month 2: Saved 300.00 €  
Month 3: Saved 450.00 €  
Month 4: Saved 600.00 €

## 5. Countdown

Create a countdown from a specified number to 0. Use a while loop.

The program outputs the countdown until liftoff is reached at zero.

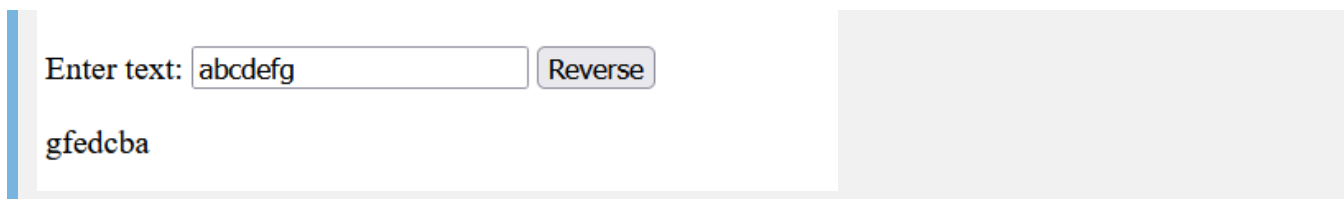
Enter starting point:

T minus 5  
T minus 4  
T minus 3  
T minus 2  
T minus 1  
Liftoff!

## 6. Reverse text

Write a program that reverses text.

The program asks for a text and shows it reversed.

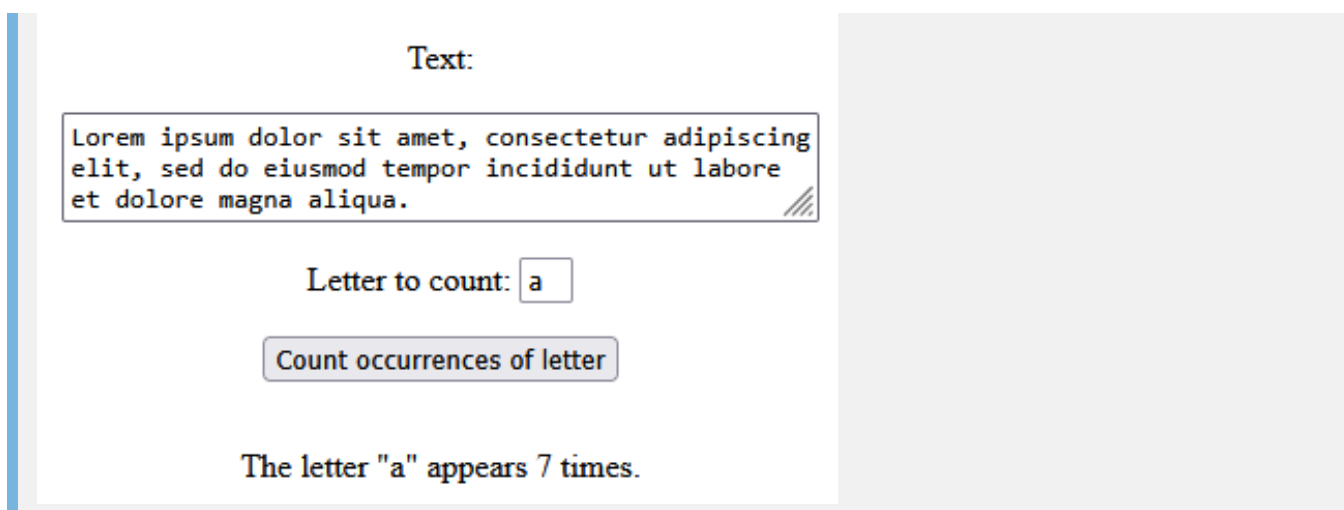


The screenshot shows a web-based interface for a text reversal program. On the left, there is a light blue vertical bar. The main area has a white background. It contains the text "Enter text:" followed by a text input field containing "abcdefg". To the right of the input field is a button labeled "Reverse". Below the input field, the reversed text "gfedcba" is displayed. To the right of the main area is a large, empty light gray rectangular box.

## 7. Count letters

Write a program that counts how many times a letter appears in a text.

The program asks for the text passage and the letter to search, and shows the number of occurrences of the letter.



The screenshot shows a web-based interface for a letter counting program. On the left, there is a light blue vertical bar. The main area has a white background. It contains the text "Text:" above a text area containing the Lorem Ipsum text: "Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua." Below the text area is the text "Letter to count:" followed by a text input field containing "a". Below the input field is a button labeled "Count occurrences of letter". At the bottom, the result "The letter 'a' appears 7 times." is displayed. To the right of the main area is a large, empty light gray rectangular box.

### Hints

- String literals can be defined also using single quotes (e.g. `'literal'`). If you do so, you can include double quote characters (`"`) in the string.