

# AN EXAMPLE JAVASCRIPT PROJECT

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# AFTER THIS PRESENTATION

- You'll have stronger JavaScript skills!

# THIS PROJECT USES

function	while	alert()	Math.random()
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return	if	prompt()	Math.floor()
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onload()			parseInt()
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			isNaN()
--	--	--	---------

# STRENGTHENING YOUR UNDERSTANDING

- Let's use some of the techniques you have learned
- We will make a simple guessing game

×

I am thinking of a number.

Please enter a number in the range 1 to 100.

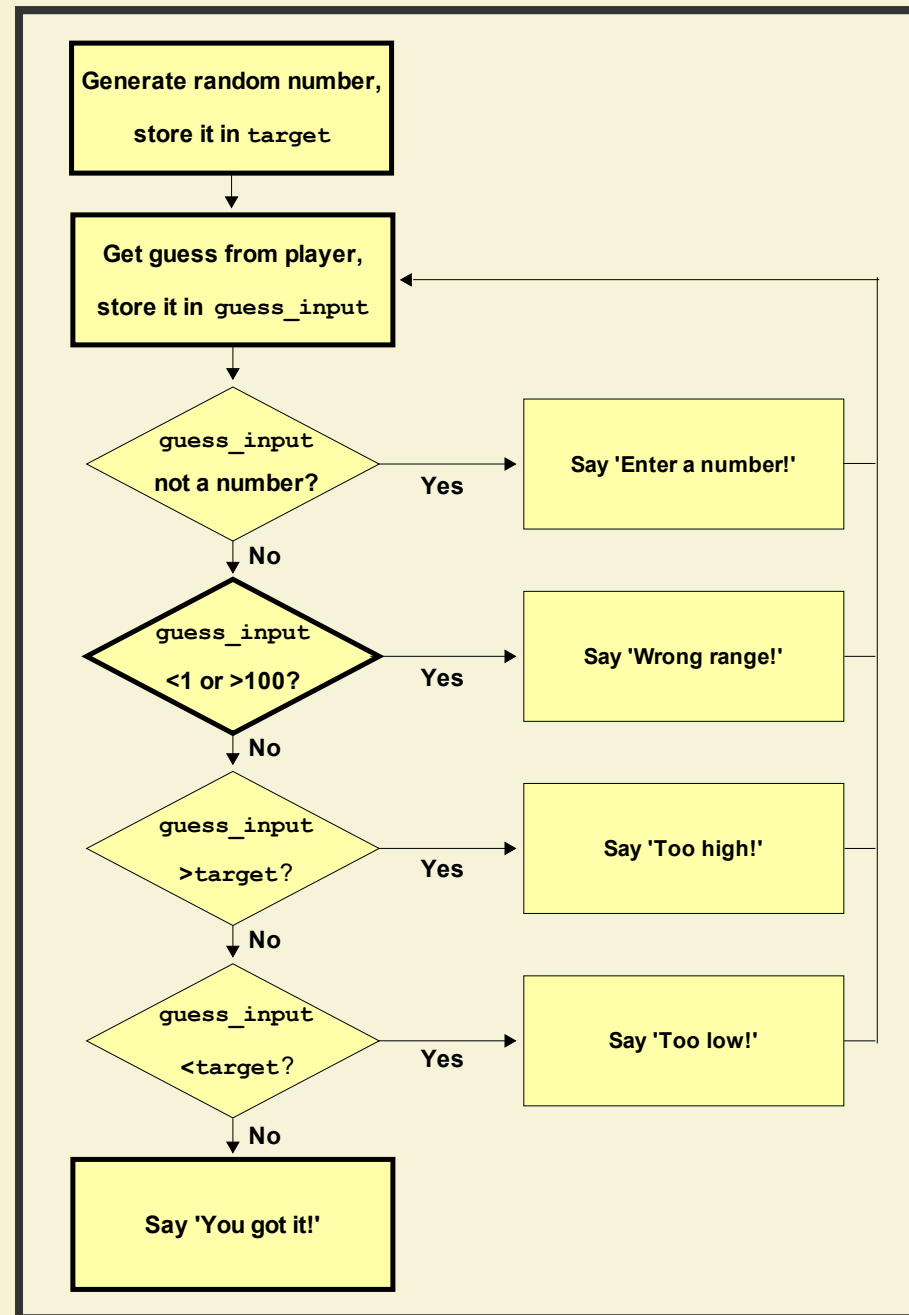
OK

Cancel

Click [here](#) to play the game

# HOW IT WORKS

- The computer thinks of a number in the range  $[1, 100]$
- The player has to guess what it is
- The computer tells the player if if answer is right or wrong
- When the game is over, the player is told how many times they guessed



# HTML PART

```
<html>
<head>
  <title>JavaScript Guessing Game</title>
</head>
  <body onload="do_game()">
    <script src="js_guessing_game.js">
    </script>
  </body>
</html>
```



- The main function is triggered when the web page is loaded:

```
<body onload="do_game () ">
```

- The actual code is stored in another file:

```
<script src="js_guessing_game.js">  
</script>
```

# JAVASCRIPT COMPONENTS

- 1. The global variables
- 2. The main game function - `do_game()`
  - 2.1. Generate a random number in the range [1,100]
  - 2.2. A `while` loop
- 3. Check the input function - `check_guess()`
  - To check whether the player's guess is:
    - 3.1. not a number, 3.2. out of range, 3.3. too large, 3.4. too small, or 3.5. correct
  - 3.5. Give feedback to the user

# 1. THE GLOBAL VARIABLES

```
var target;  
var guess_input_text;  
var guess_input;  
var finished = false;  
var guesses = 0;
```

## 2. MAIN GAME FUNCTION

- 2.1. Generate a random number in the range 1 to 100

```
var random_number = Math.random() * 100;  
var random_number_integer = Math.floor(random_number);  
target = random_number_integer + 1;
```

- 2.2. Use a while loop

```
while (!finished) {
```

*... code goes here ...*

```
};
```

## 2.2. INSIDE THE WHILE LOOP

1. Get the player's input

```
guess_input_text = prompt("Please enter a number " +  
                           "in the range 1 to 100.");
```

2. Convert the input to an integer

```
guess_input = parseInt(guess_input_text);
```

3. Increment the number of guesses

```
guesses += 1
```

4. Check the player's answer

```
finished = check_guess();
```

## 3. CHECK\_GUESS()

- Checks whether the player's guess is:
  - 3.1. Not a number
  - 3.2. Out of range
  - 3.3. Too large
  - 3.4. Too small
  - 3.5. Correct

# ISNAN() FUNCTION

- Returns true if the input parameter is NOT a number and vice versa
- We will make use of this function to check whether the player has entered a number

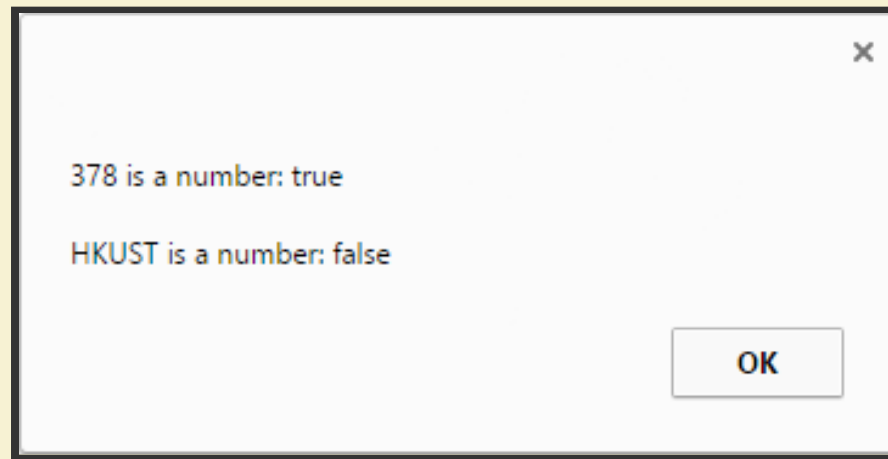
# ISNaN() EXAMPLE

```
<html>
<head>
  <title>isNaN() Example</title>
</head>
<body><script>
  alert("378 is a number: " + !isNaN(378) + "\n\n" +
        "HKUST is a number: " + !isNaN("HKUST"));
</script></body>
</html>
```

Click [here](#) to see the example



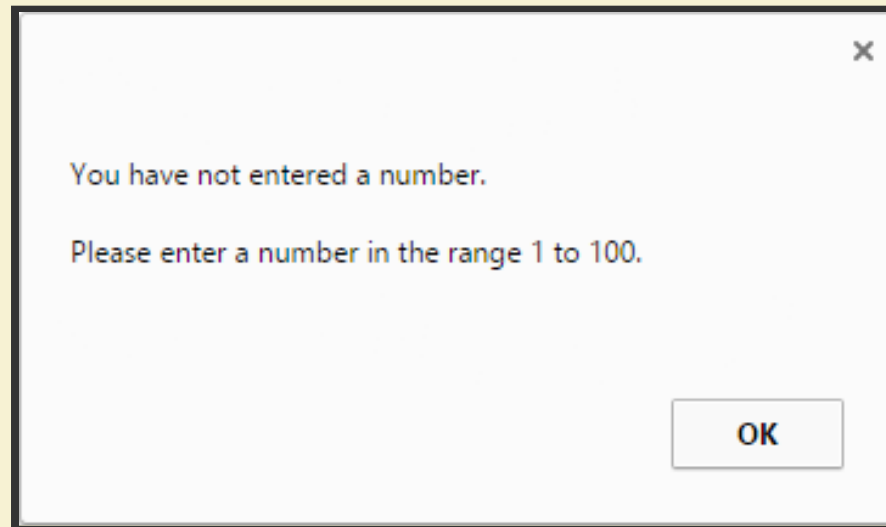
# ISNAN() EXAMPLE



# IF THE PLAYER'S GUESS IS :

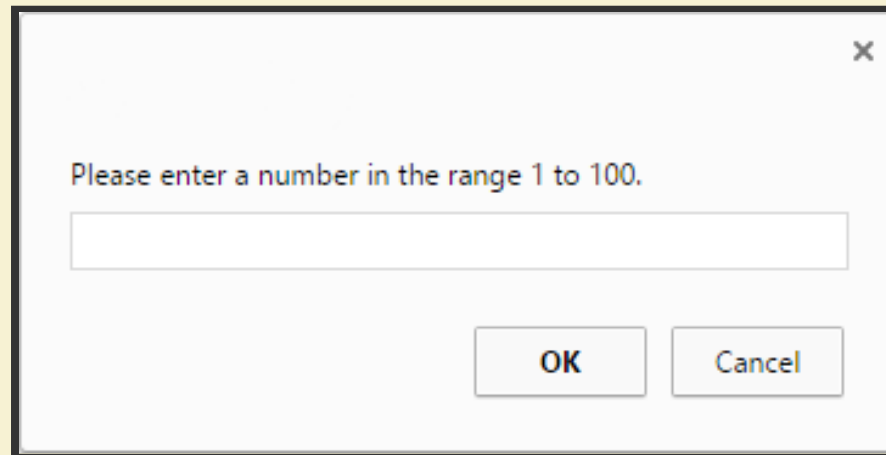
## 3.1. NOT A NUMBER

```
if (isNaN(guess_input)) {  
    alert("You have not entered a number.\n\n" +  
        "Please enter a number in the range 1 to 100.");  
    return false;  
}
```



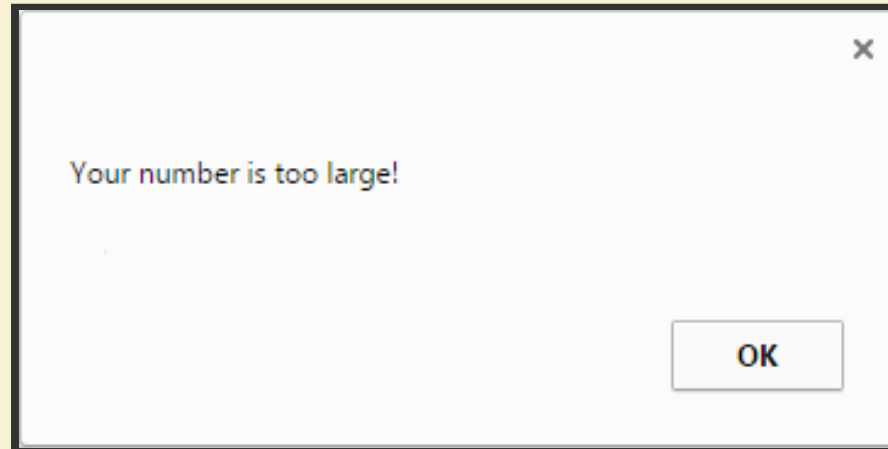
## 3.2. OUT OF RANGE

```
if ((guess_input < 1) || (guess_input > 100)) {  
    alert("Please enter an integer number" +  
        "in the range 1 to 100.");  
    return false;  
}
```



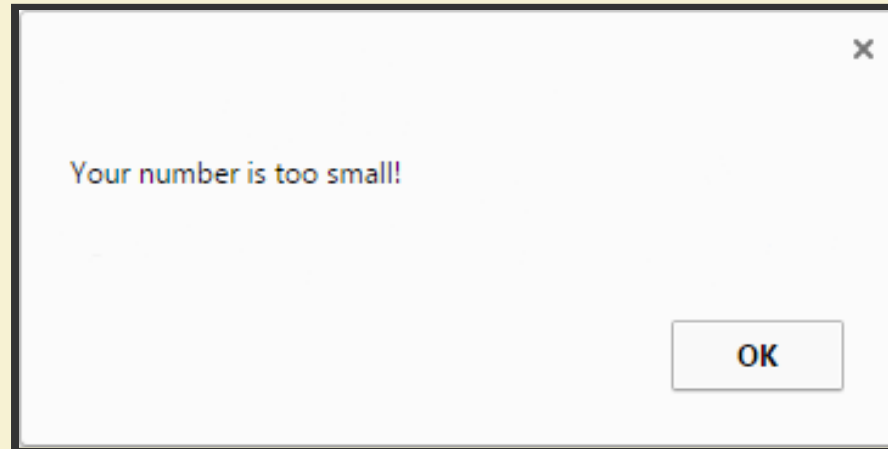
## 3.3. TOO LARGE

```
if (guess_input > target) {  
    alert("Your number is too large!");  
    return false;  
}
```



## 3.4. TOO SMALL

```
if (guess_input < target) {  
    alert("Your number is too small!");  
    return false;  
}
```



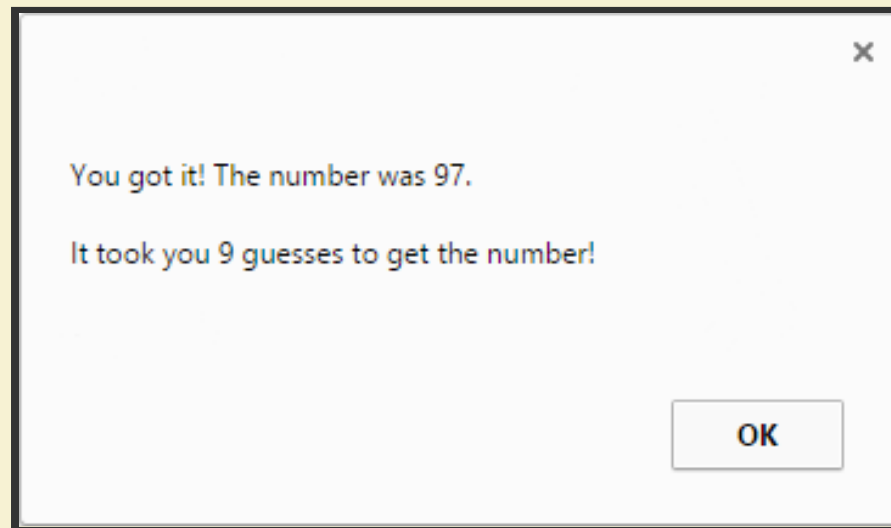
## 3.5. CORRECT

1. Congratulate the player and show the number of guesses

```
alert("You got it! The number was " + target +  
      ". \n It took you " + guesses +  
      "guesses to get the number!");
```

2. Return a true value to the main function

```
return true;
```



```
var target;
var guess_input_text;
var guess_input;
var finished = false;
var guesses = 0;

function do_game(){
    var random_number = Math.random() * 100;
    var random_number_integer = Math.floor(random_number);
    target = random_number_integer + 1;

    while (!finished) {
        guess_input_text = prompt("I am thinking of a number "+
                                "in the range 1 to 100.\n\n"+
                                "What is the number? ");
        guess_input = parseInt(guess_input_text);
        guesses += 1;
        finished = check_guess();
    }
}
```



```
function check_guess() {
  if (isNaN(guess_input)) {
    alert("You have not entered a number.\n\n" +
      "Please enter a number in the range 1 to 100.");
    return false;
  }
  if ((guess_input < 1) || (guess_input > 100)) {
    alert("Please enter an integer number in the range 1 to 100.");
    return false;
  }
  if (guess_input > target) {
    alert("Your number is too large!");
    return false;
  }
  if (guess_input < target) {
    alert("Your number is too small!");
    return false;
  }
  alert("You got it! The number was " + target +
    ".\n\nIt took you " + guesses +
    " guesses to get the number!");
  return true;
}
```