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Student Class: SD2-A

1. **The Calculator**

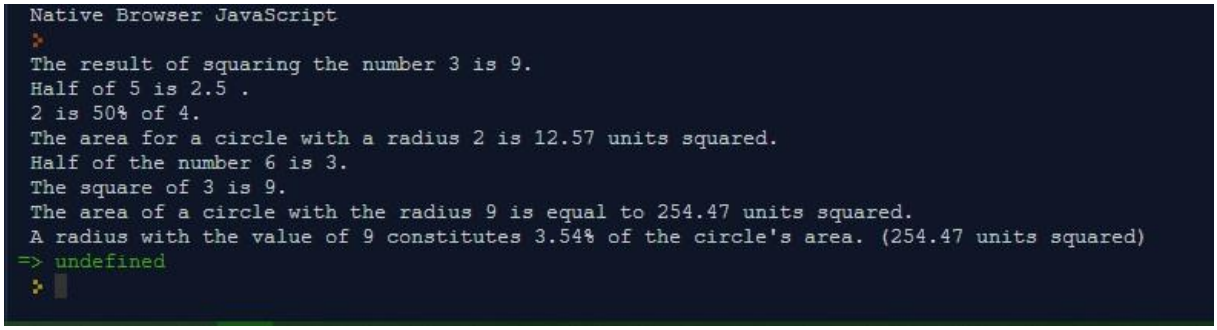
```
// I create a function which evaluates the square of a number and takes the number as an argument.
function squareNumber(number) {
   // I calculate the square of a number using the "Math.pow" function.
   number_squared = Math.pow(number, 2);
   // I log the appropriate sentence with 2 values substituted.
   console.log("The result of squaring the number " + number + " is " + number_squared + ".");

   // I return the outcome. (a number squared)
   return number_squared;
}

// I invoke the function with a number to be squared.
squareNumber(3);



// I create a function which evaluates the quotient of a number with a divisor equal to 2.
function halfNumber(number2) {
   // I assign the divisor to a variable.
```

```
    divisor = 2;
    // I calculate the quotient of a number, given a dividend and the divisor.
    number_divided_by_2 = number2 / divisor;
    console.log("Half of " + number2 + " is " + number_divided_by_2 + " .");

    // I return the outcome. (a number divided by 2)
    return number_divided_by_2;
}

// I invoke the function with a number to be divided by 2.
halfNumber(5);



// I create a function which evaluates the percentage of which one number constitutes in regard to a second number.
function percentOf(number3, number4) {
    // I calculate the percentage given two numbers as the arguments.
    percentage = (number3 / number4) * 100;
    // I log the appropriate sentence with 3 values substituted.
    console.log(number3 + " is " + percentage + "% of " + number4 + ".");

    // I return the percentage. (the ratio of 2 numbers)
    return percentage;
}

// I invoke the function with 2 numbers. (first to the second as a percentage ratio)
```

```
percentOf(2, 4);



// I create a function which evaluates the area of a circle which takes the radius as an argument.
function areaOfCircle(radius) {
   // I assign the mathematical 'PI' to a variable.
   PI = Math.PI;
   // I calculate the actual area of a circle.
   circle_area = PI * radius ** 2;
   // I display an appropriate sentence with the value of radius substituted and the circle's area rounded to 2 decimal places.
   console.log("The area for a circle with a radius " + radius + " is " + circle_area.toFixed(2) + " units squared.");

   // I return the area of a circle.
   return circle_area;
}

// I invoke the function with a radius passed as a parameter.
areaOfCircle(2);



// I create a function which takes one number as an argument and performs various mathematical operations.
function myFunction(number5) {
   // I calculate the quotient of a number with the divisor equal to 2 and I store the result in a variable.
```

```
    number5_divided_by_2 = number5 / 2;

    // I display an appropriate sentence with the value of the parameter passed and the result of dividing the number by 2.

    console.log("Half of the number " + number5 + " is " + number5_divided_by_2 + ".");


    // I calculate the square of the result from part 1 and I store it in a variable.

    result_to_be_squared = Math.pow(number5_divided_by_2, 2);

    // I display an appropriate sentence with the value of quotient from part 1 and the result of squaring it.

    console.log("The square of " + number5_divided_by_2 + " is " + result_to_be_squared + ".");


    // I calculate the circle's area with the radius taken as a result from part 2 and I store it in a variable.

    resulting_circle_area = Math.PI * result_to_be_squared ** 2;

    // I display an appropriate sentence with the value of radius and the resulting circle area rounded to 2 decimal places.

    console.log("The area of a circle with the radius " + result_to_be_squared + " is equal to "

    + resulting_circle_area.toFixed(2) + " units squared.");


    // I calculate the percentage of which the radius constitutes in regard to the area of a circle and I store it in a variable.

    resulting_percentage = (result_to_be_squared / resulting_circle_area) * 100;

    // I display an appropriate sentence with the values of radius, percentage and again the circle's area substituted.
```

```
    console.log("A radius with the value of " + result_to_be_squared + "
constitutes " + resulting_percentage.toFixed(2)
    + "% of the circle's area. " + "(" + resulting_circle_area.toFixed(2) + " units
squared)");
}

// I invoke the function with a number passed as a parameter.
myFunction(6);
```



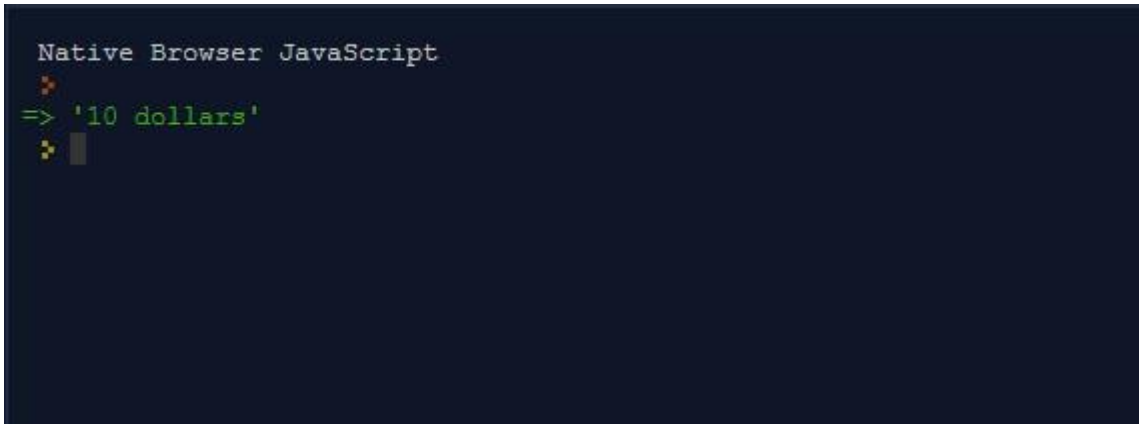
2. DrEvil

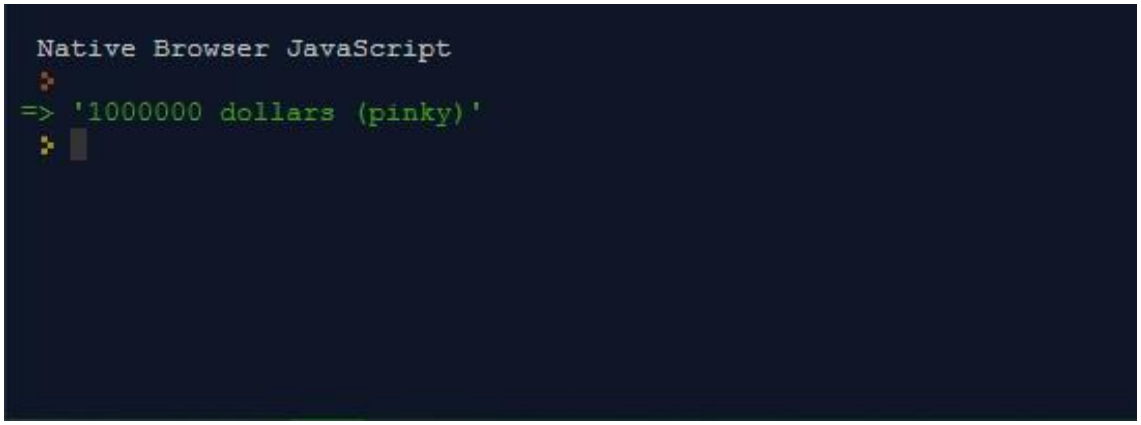
```
// I create a function which takes an amount as the argument and returns
the amount with a string "dollars".
function DrEvil(amount) {
    // If the amount equals 1000000 change the string to "dollars (pinky)".
    if (amount == 1000000) {
        // I return the amount with the string added.
        return amount + " dollars (pinky)";
    }

    // Normally I just return the amount with a string "dollars".
    return amount + " dollars";
```

}

// I call the function with an amount.

DrEvil(1000000);





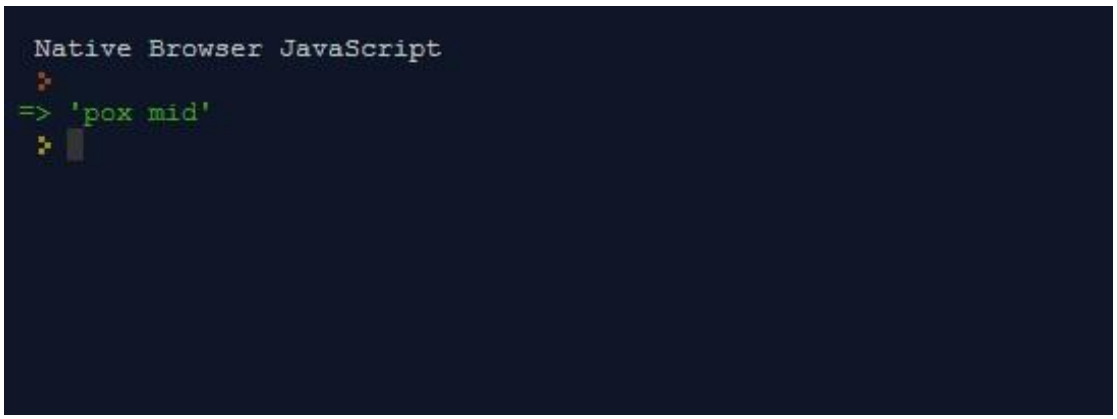
3. MixUp

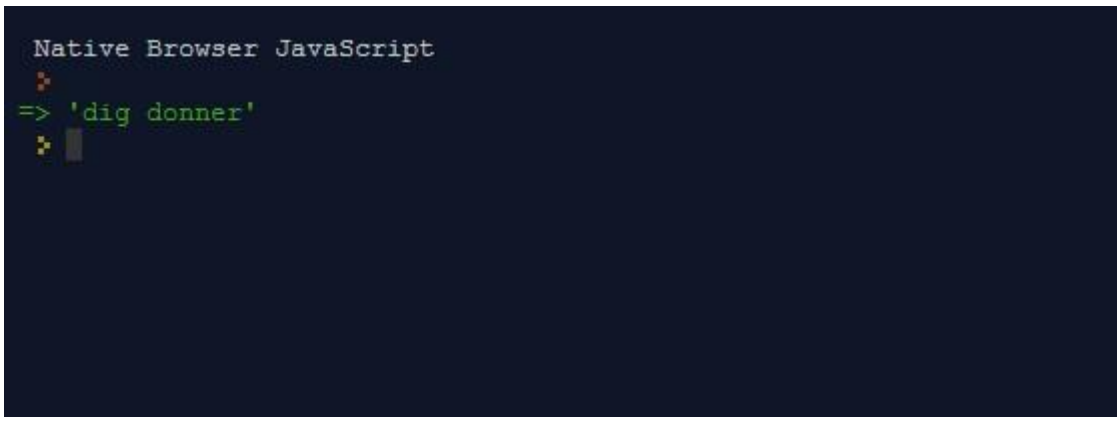
// I create a function which takes two strings as the arguments and mixes them up.

function mixUp(string1, string2) {

  // I swap the first two characters of each string and I concatenate the strings.

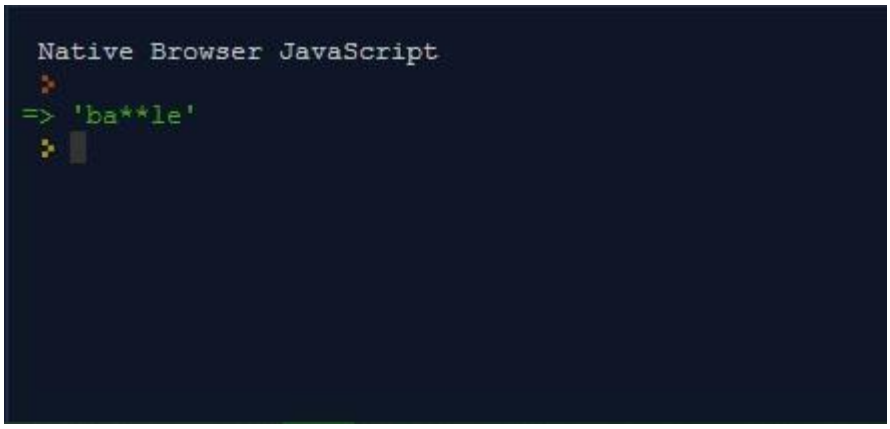
```
    concatenated_mixed_up_strings = string2.slice(0, 2) + string1.slice(2) + " "
+ string1.slice(0, 2) + string2.slice(2);


    // I return the outcome.
    return concatenated_mixed_up_strings;
}


// I call the function with two strings passed as the arguments.
mixUp("mix", "pod");
```





4. FixStart

```
// I create a function which takes a single string as the argument and returns the modified version of it.
function fixStart(string) {
   // I assign the first character of a string to a variable.
   first_character_in_a_string = string.charAt(0);
   // I assign the star sign to a variable.
   star_sign = "*";
   /* I take the first character of a string, then the second up to the end of the string,
   * but I replace each occurence of the first character in the string with a star.
   */
   changed_string = first_character_in_a_string + string.slice(1).replace(new RegExp(first_character_in_a_string, 'g'), star_sign);

   // I return the outcome.
   return changed_string;
}

// I call the function with a string passed as the parameter.
fixStart("babble");
```



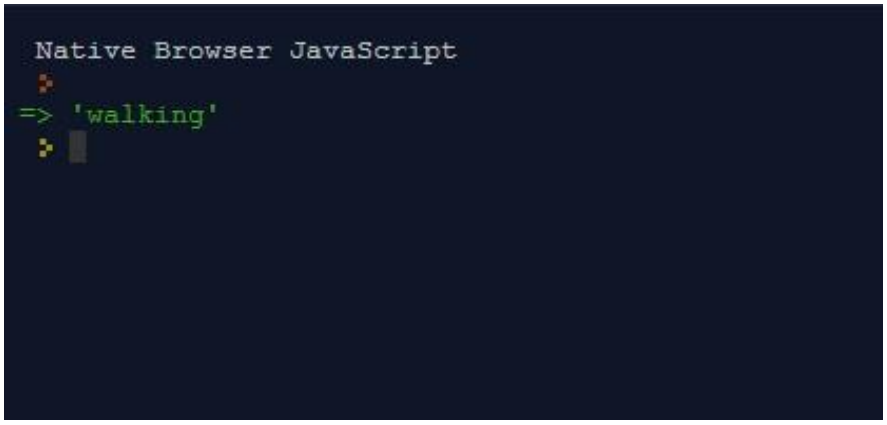
5. Verbing

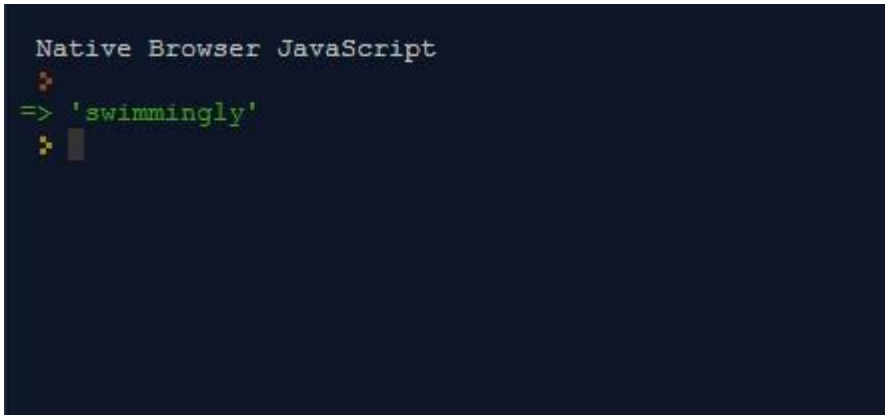
```
// I create a function which takes a string as the argument and changes the string in a couple of ways.

function verbing(string) {

  // If the last three letters of the string are "ing" (the word ends with an 'ing'), I do the following:

  if (string.slice(-3) == "ing") {

    // I return the string with "ly" ending.

    return string + "ly";

  }

  // If the length of the string is greater than or equal to 3, I do the following:

  else if (string.length >= 3) {

    // I return the string with "ing" ending.

    return string + "ing";

  }


  // If the two above conditions fail, I just return the unchanged string.

  return string;
```

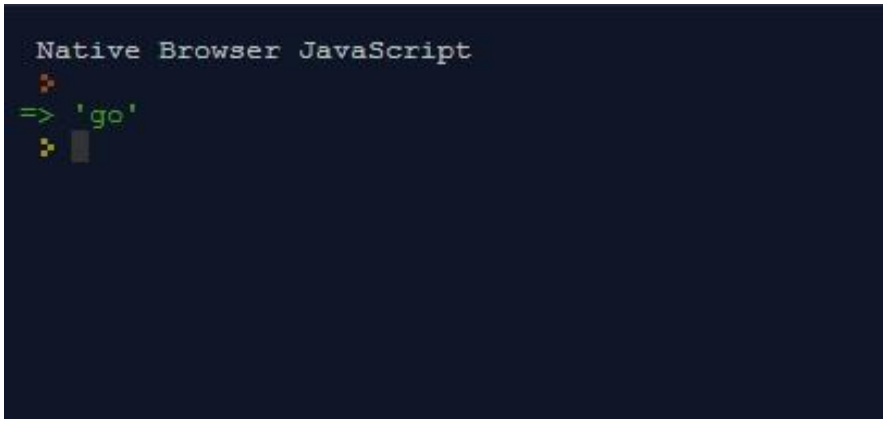
}

// I call the function with a string passed as the parameter.

verbing("walk");

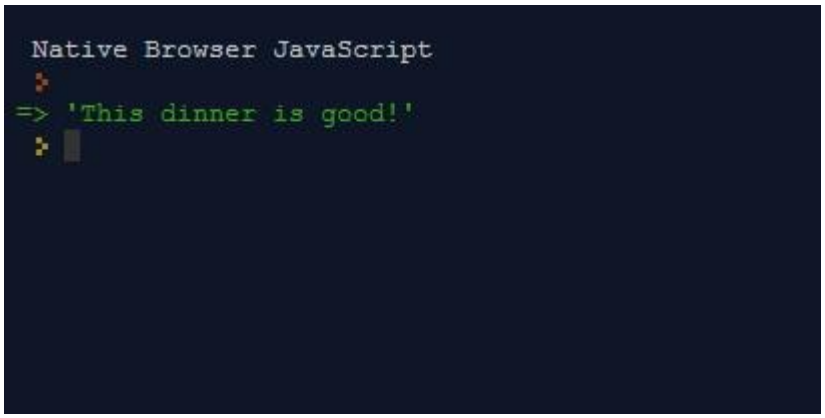


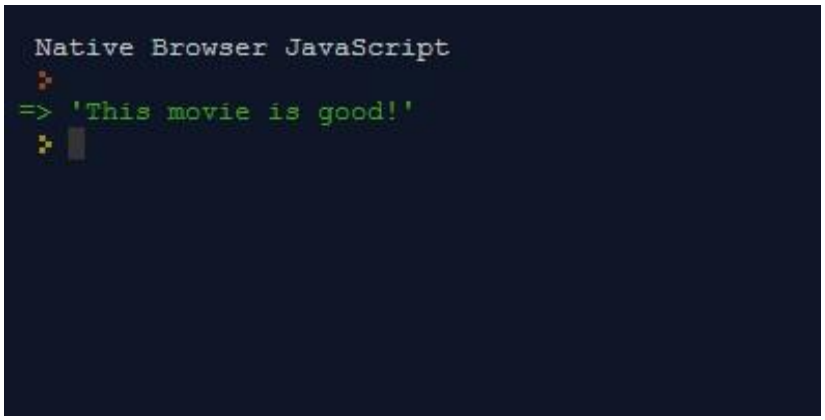


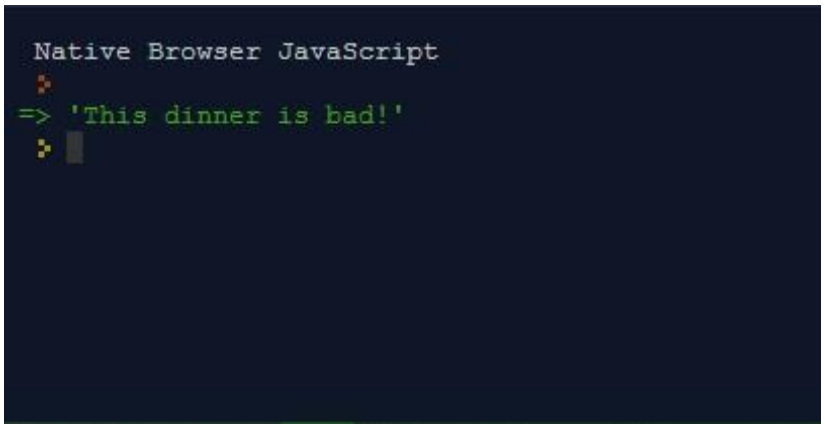


6. Not Bad

```
// I create a function which takes a string as the argument and performs several operations with it.
function notBad(string) {
  // I assign the index of the substring "not" to a variable.
  substring_not = string.indexOf("not");
  // I assign the index of the substring "bad" to a variable.
  substring_bad = string.indexOf("bad");
  // If the substrings not and bad cannot be found or they are not in the right sequence, I do the following:
  if (substring_not == -1 || substring_bad == -1 || substring_bad < substring_not) {
    // I just return the original sentence.
    return string;
  }

  // If the above condition fails, I replace the whole substring containing not and bad with a "good" substring and I assign it to a variable.
  modified_string = string.slice(0, substring_not) + "good" + string.slice(substring_bad + 3);

  // I return the outcome.
  return modified_string;
}

// I call the function with a string passed as the parameter.
notBad("This dinner is not that bad!");
```


Native Browser JavaScript
=> 'This dinner is good!'

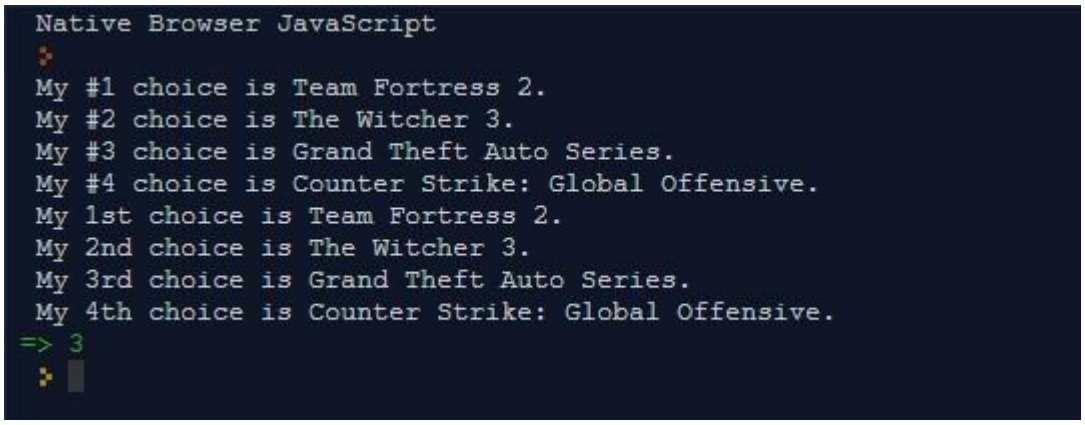

Native Browser JavaScript
=> 'This movie is good!'


Native Browser JavaScript
=> 'This dinner is bad!'

7. Your Top Choices

```
// I create an array to hold my top choices.
top_choices = ["Team Fortress 2", "The Witcher 3", "Grand Theft Auto Series", "Counter Strike: Global Offensive"];

// I initialise the index beginning from 0.
index1 = 0;
// As long as the index does not reach the end of the array, I consider the following:
while (index1 < top_choices.length) {
   // I log the appropriate sentence with the current index substituted along with the choice from the array.
   console.log("My #" + (index1 + 1) + " choice is " + top_choices[index1] + ".");
   // I increment the index by 1 with each loop's iteration.
   index1++;
}

// I initialise another index for a different loop, but it also begins from 0.
index2 = 0;
while (index2 < top_choices.length) {
   // I assign the current index to the choice from the array.
   choice_number = index2 + 1;
   // I initialise the suffix for a number.
   number_suffix = "";
   // If the choice equals 1, I do the following:
   if (choice_number == 1) {
```

```
      // I assign the "st" suffix to the variable initialised earlier.
      number_suffix = "st";
   }
   // If the choice equals 2, I do the following:
   else if (choice_number == 2) {
      // I assign the "nd" suffix to the variable.
      number_suffix = "nd";
   }
   // If the choice equals 3, I do the following:
   else if (choice_number == 3) {
      // I assign the "rd" suffix to the variable.
      number_suffix = "rd";
   }
   // Otherwise, I do the following:
   else {
      // I assign the "th" suffix to the variable in any other choice.
      number_suffix = "th";
   }

   // I log the appropriate sentence with the value of index (current number), the suffix of the number and the actual choice from the array.
   console.log("My " + choice_number + number_suffix + " choice is " + top_choices[index2] + ".");
   index2++;
}
```



8. The Word Guesser

```
// I create a global array to hold the letters of a word.
letters = ['F', 'O', 'X'];
// I create a global array to hold the current guessed letters.
guessed_letters = ['_', '_', '_'];

// I create a function which acts as a word guesser game and takes one letter to be guessed at a time for the argument.
function guessLetter(guessed_letter) {
   // I initialise the right guess with the value of "false".
   right_guess = false;
   // I initialise "more letters to guess" with the value of "false".
   more_letters_to_guess = false;

   // I intitialise the index with a value of 0.
   index = 0;
   // I intitialise the reward amount with a value of 0.
   reward_amount = 0;
   // I initialise the state of the hangman.
```

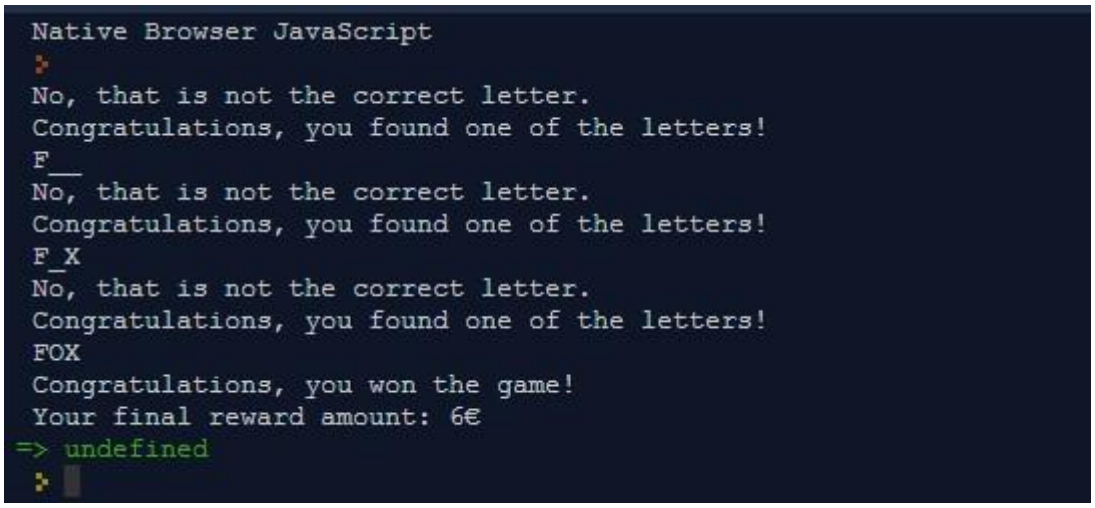
```
    hangman_state = 0;
    // As long as the index does not pass through all the characters in the array, I consider the following operations:
    while (index < letters.length) {
        // If the guessed letter matches the one at a particular index, I consider the following:
        if (letters[index] == guessed_letter) {
            // I assign the current letter to the "guessed_letter" variable.
            guessed_letters[index] = guessed_letter;
            // I reward the player by generating a random amount and I add it to the variable "reward_amount".
            reward_amount += Math.floor((Math.random() * 10) + 1);
            // If the player makes a right guess, I subtract from the hangman.
            hangman_state--;
            // I assign the value "true" to the "right_guess" variable confirming that a player guessed the letter.
            right_guess = true;
        }
        // If there are still some letters to be guessed in a word, I do the following:
        if (guessed_letters[index] == '_') {
            // I set the "more_letters_to_guess" variable to be "true".
            more_letters_to_guess = true;
        }

        // I increment the index by 1 with each iteration of the loop.
        index++;
    }
```

```
   // If a player actually guessed one of the letters in a word, I consider the following:
   if (right_guess) {
      // I congratulate the player about the accurate guess.
      console.log("Congratulations, you found one of the letters!");
      // I log the current guessed letters in this line.
      console.log(guessed_letters.join(''));
      // If there are not any more letters to be guessed by the player, then I do the following:
      if (!more_letters_to_guess) {
         // I congratulate the player about winning the guessing game.
         console.log("Congratulations, you won the game!");
         // I log the final reward amount.
         console.log("Your final reward amount: " + reward_amount + "€");
      }
   }
   // Otherwise, I do the following:
   else {
      // I inform the player that the guess was not accurate.
      console.log("No, that is not the correct letter.");
      // I subtract a random amount from the total reward amount.
      reward_amount -= Math.floor((Math.random() * 10) + 1);
      // If the player makes a wrong guess, I add to the hangman.
      hangman_state++;
      // If the number reaches 6, I do the following:
      if (hangman_state == 6) {
         // I inform that the player lost.
```

```
        console.log("You lost!")
      }
    }
}
```

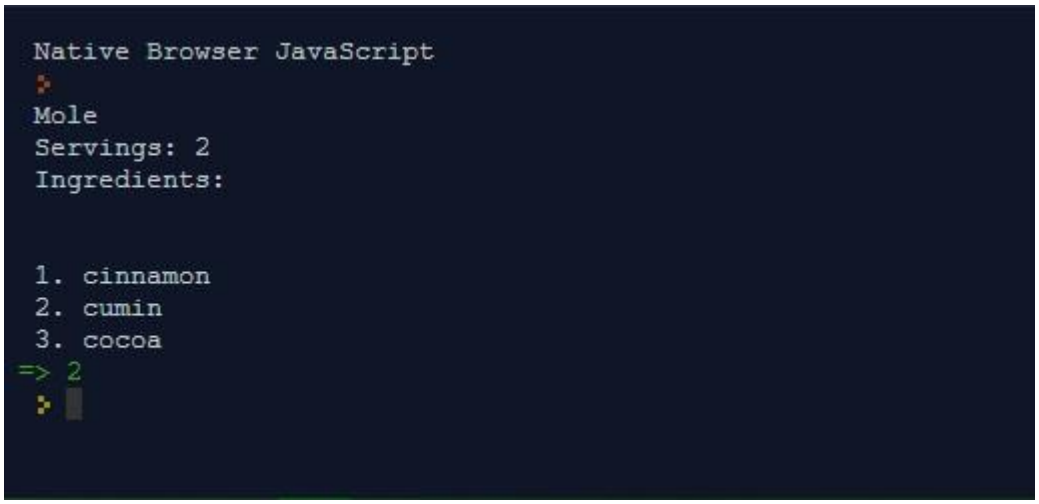
// I call the function multiple times with various letters to check that the game works.

```
guessLetter("J");

guessLetter('F');

guessLetter('W');

guessLetter('X');

guessLetter('A');

guessLetter('O');
```



9. The Recipe Card

```
// I create an object to hold information about a recipe.
var recipe = {title: "Mole", servings: 2, ingredients: ["cinnamon", "cumin", "cocoa"]};

// I log the recipe's information with a title, servings and ingredients.
console.log(recipe.title);
console.log("Servings: " + recipe.servings);
console.log("Ingredients:");
console.log("\n");

// I initialise the index which begins from 0.
index = 0;
// As long as the index has not gone through each of the ingredients, I consider the following:
while (index < recipe.ingredients.length) {
   // I log the number in order with a specified ingredient assigned to the index.
   console.log((index + 1) + ". " + recipe.ingredients[index]);
   // I increment the index by 1 with each loop's iteration.
   index++;
}
```



10. The Cash Register

/* I could not figure out how to calculate and return the total price of the shopping cart.

* It would be useful if the answer to this question was posted on BlackBoard.

*/

// I create a shopping cart object with some of the products and their prices.

var cartForParty = {

banana: "1.25",

handkerchief: ".99",

Tshirt: "25.01",

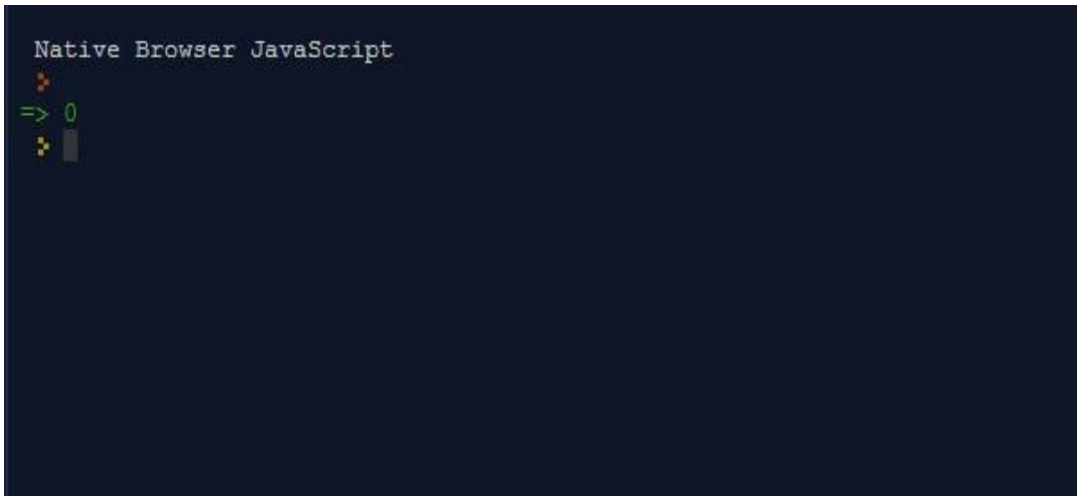
apple: "0.60",

nalgene: "10.34",

proteinShake: "22.36"

};

```
// I create a function which should calculate and return the total price of the shopping cart and takes the object as the parameter.
function cashRegister(cartForParty) {
   // I assign the products and their prices to a variable.
   products = Object.keys(cartForParty);
   // I initialise the total price to be equal to 0.
   total_price = 0.00;
   // For each of the products in the list, I will iterate through the "shopping cart" incrementing by 1 with each iteration of the loop.
   for (index = 0; index < cartForParty.length; index++) {
      // I assign a product at a particular index to a variable.
      name_of_item = products[index];
      // I assign a price to which a product belongs to.
      price_of_item = cartForParty[name_of_item];
      // I accumulate the total price to be paid at the checkout.
      total_price += price_of_item;
   }

   // I return the total price after picking all the products.
   return total_price;
}

// I call the function with the object passed as the parameter.
cashRegister(cartForParty);
```


Native Browser JavaScript
=> 0