

Hands – On Lab Workshop

3.

AREA OF TRIANGLE

Write a function that takes the base and height of a triangle and **return** its area.

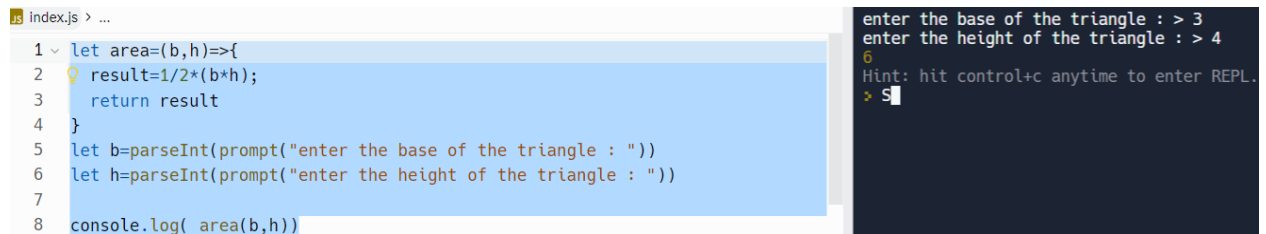
Example:

Areaoftriangle (3, → 4) 6

Areaoftriangle (7, → 8) 28

Notes

- Area of triangle is $(\text{base} * \text{height})/2$
- Don't forget to return the result



```
index.js > ...
1 let area=(b,h)=>{
2   result=1/2*(b*h);
3   return result
4 }
5 let b=parseInt(prompt("enter the base of the triangle : "))
6 let h=parseInt(prompt("enter the height of the triangle : "))
7
8 console.log( area(b,h))
```

```
enter the base of the triangle : > 3
enter the height of the triangle : > 4
6
Hint: hit control+c anytime to enter REPL.
> S
```

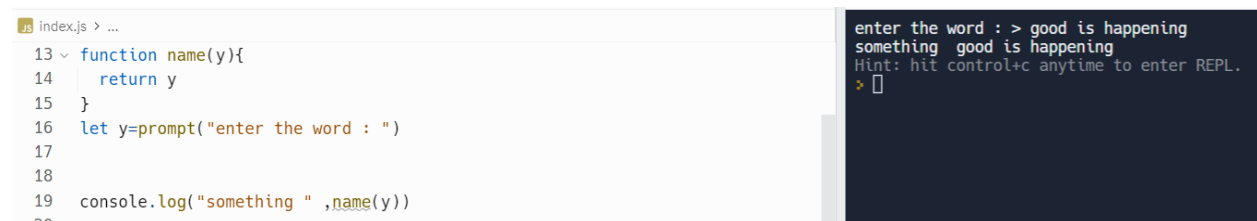
RETURN SOMETHING TO ME!

Write a function that returns the string "something" joined with a space " " and the given argument.

Examples

giveMeSomething("is better than nothing") → "something is better than nothing"

giveMeSomething("Bob Jane") → "something Bob Jane" giveMeSomething("something") → "something something"



```
index.js > ...
13 function name(y){
14   return y
15 }
16 let y=prompt("enter the word : ")
17
18
19 console.log("something " ,name(y))
```

```
enter the word : > good is happening
something good is happening
Hint: hit control+c anytime to enter REPL.
> []
```

BASKETBALL POINTS

You are counting points for a basketball game, given the amount of 2 – pointer scored and 3 – pointer scored, find the final points for the team and return the value.

Example:

points \longrightarrow (3,5) $3*2 + 5*3 = 21$

points \longrightarrow (1,1) 5

```
Index.js > ...
21 ~ function score(s,t){
22   result=2*s+3*t
23   return result
24 }
25 let s=parseInt(prompt("enter the number of time 2 is scored : "))
26 let t=parseInt(prompt("enter the number of time 3 is scored : "))
27 console.log("total score is ",score(s,t))
28
```

```
enter the number of time 2 is scored : > 3
enter the number of time 3 is scored : > 5
total score is 21
Hint: hit control+c anytime to enter REPL.
>
```

LESS THAN 100?

Given two numbers, return true if the sum of both numbers is less than 100.

Otherwise return false.

Examples

lessThan100(22, 15) \rightarrow true

// $22 + 15 = 37$ lessThan100(83,

34) \rightarrow false // $83 + 34 = 117$

lessThan100(3, 77) \rightarrow true

```
Index.js > x y
29 ~ function lessthen100(x,y){
30   sum=x+y
31 ~ if (sum<100){
32   return true
33 }
34 ~ else{
35   return false
36 }
37 }
38 let x=parseInt(prompt("enter the first number: "))
39 let y=parseInt(prompt("enter the second number: "))
40 console.log(lessthen100(x,y))
```

```
enter the first number: > 87
enter the second number: > 5
true
Hint: hit control+c anytime to enter REPL.
>
```

ADD UPTO THE NUMBER FROM A SINGLE NUMBER

Create a function that takes a number as an argument. Add up all the numbers from 1 to the number you passed to the function. For example, if the input is 4 then your function should return 10 because $1+2+3+4 = 10$

```
c.js > ...  
function add(y){  
  s=0  
  
  for(i=0;i<=y;i++){  
    s+=i  
  }  
  return s  
}  
let y=parseInt(prompt("enter a number: "))  
console.log(add(y))
```

```
enter a number: > 4  
10  
Hint: hit control+c an  
> |
```

ANY PRIME NUMBER IN RANGE

Create a function that return true if there is at least one prime number in the given range(n1 to n2) inclusive, false otherwise.

Example: primeInRange(10,15)

————→ true

// prime number is range : 11, 13 primeInRange(3,1)

————→ true

// prime number is range : 3, 5

```
5
function pr(n1,n2){
  for (let i=n1;i<n2;i++){
    for(let j=1;j<n2;j++){
      if(i%j==0){
        return false
      }
      else{
        return true
      }
    }
  }
}
let n1=parseInt(prompt("enter a number: "))
let n2=parseInt(prompt("enter a number: "))
if(true){
  console.log("prime number is present")
}
else{
  console.log("prime number not is present")
}
pr(n1,n2)
```

```
enter a number: > 8
enter a number: > 10
prime number is present
Hint: hit control+c anytim
> []
```

ODDISH VS. EVENISH

Create a function that determines whether a number is Oddish or Evenish. A number is Oddish if the sum of all of its digits is odd, and a number is Evenish if the sum of all of its digits is even. If a number is Oddish, return "Oddish". Otherwise, return "Evenish".

For example, oddishOrEvenish(121) should return "Evenish", since $1 + 2 + 1 =$

4. oddishOrEvenish(41) should return "Oddish", since $4 + 1 = 5$.

Examples

oddishOrEvenish(43) → "Oddish"

// $4 + 3 = 7$ //

$7 \% 2 = 1$

oddishOrEvenish(373) → "Oddish"

// $3 + 7 + 3 = 13$ //

$13 \% 2 = 1$

oddishOrEvenish(4433) → "Evenish"

// $4 + 4 + 3 + 3 = 14$

```
// 14 % 2 = 0
```

```
js > ...
function hello(x){
  sum=0
  while (x>0){
    d=x%10
    sum+=d
    x=parseInt(x/10)
  }
  console.log(sum)
  if (sum%2==0){
    return 'evenish'
  }
  else{
    return 'oddish'
  }
}
let x=parseInt(prompt("enter a number: "))
console.log(hello(x))
```

```
enter a number: > 987
24
evenish
Hint: hit control+c any
```

LEFT SHIFT BY POWERS OF TWO

The left shift operation is similar to multiplication by powers of two.

Sample calculation using the left shift operator (\ll):

$$10 \ll 3 = 10 * 2^3 = 10 * 8 = 80$$

$$-32 \ll 2 = -32 * 2^2 = -32 * 4 = -128$$

$$5 \ll 2 = 5 * 2^2 = 5 * 4 = 20$$

Write a function that mimics (without the use of \ll) the left shift operator and returns the result from the two given integers.

Examples

`shiftToLeft(5, 2)` \rightarrow 20

`shiftToLeft(10, 3)` \rightarrow 80

`shiftToLeft(-32, 2)` \rightarrow -128

`shiftToLeft(-6, 5)` \rightarrow -192

`shiftToLeft(12, 4)` \rightarrow 192

`shiftToLeft(46, 6)` \rightarrow 2944

- There will be no negative values for the second parameter y.

- This challenge is more like recreating the left shift operation, thus, the use of the operator directly is prohibited.
- Alternatively, you can solve this challenge via recursion.

```
js > f bello > ...
function bello(x,y){
  result=x
  if(y>0){
    for(let i=1;i<=y;i++){
      result*=2
    }
  }
  return result}
else{
  console.log("please enter a positive number")
}
}
let x=parseInt(prompt("enter a number: "))

let y=parseInt(prompt("enter a number: "))
console.log(bello(x,y))
```

```
enter a number: > 9
enter a number: > 5
288
Hint: hit control+c a
> 
```

CONVERT A NUMBER TO BASE-2

Create a function that returns a base-2 (binary) representation of a base-10 (decimal) string number. To convert is simple: ((2) means base-2 and (10) means base-10) $010101001_2 = 1 + 8 + 32 + 128$.

Going from right to left, the value of the most right bit is 1, now from that every bit to the left will be $\times 2$. The values of an 8 bit binary number are (256, 128, 64, 32, 16, 8, 4, 2, 1).

Examples

binary(1) \rightarrow "1"

// $1 \times 1 = 1$ binary(5)

\rightarrow "101" // $1 \times 1 + 1 \times 4$

= 5 binary(10) \rightarrow

"1010"

// $1 \times 2 + 1 \times 8 = 10$

Notes

- Numbers will always be below 1024 (not including 1024).

- The && operator could be useful.
- The strings will always go to the length at which the mostleft bit's value gets bigger than the number in decimal.
- If a binary conversion for 0 is attempted, return "0".

GUESSING GAME

Generate a random number (do research) and store it in a variable. Write a program to take input from the user and tell them whether their guessed number is correct, greater or lesser than the original number. (100 – number of guesses) is the score of user. The program is expected to terminate once the number is guessed. Number should be between 1 – 100.

Example:

Random number generated by computer: 54

User input: 34

// lesser than original number

User input: 67

// greater than original number

User input: 54

// congratulations!!! The number you guessed matched the original number. Your score is 97!

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```

HIGHER ORDER ARRAY METHODS

Const age = [23,34,12,54,23,54,11,9,29,17,15,19,20,21,13,7]

- a. Filter the array of age who can apply for citizenships

```
s > ...  
  
function filt(){  
  const able= age.filter ((ages)=>ages>18)  
  return able  
}  
  
const age = [23,34,12,54,23,54,11,9,29,17,15,19,20,21,13,7]  
console.log(filt())
```

```
[  
  23, 34, 54, 23, 54,  
  29, 19, 20, 21  
]  
Hint: hit control+c anytime t  
> []
```

- b. Find the average age of a given

```
js  
  
function average(age){  
  let sum=0  
  for(i=0;i<age.length;i++){  
    sum=sum+age[i]  
  }  
  av=sum/age.length  
  return av  
}  
  
const age = [23,34,12,54,23,54,11,9,29,17,15,19,20,21,13,7]  
console.log(average(age))
```

```
22.5625  
Hint: hit co  
> []
```

array Const companies = [

- { name: "ABC", category: "Finance", start: 1981, end: 2004 },
- { name: "XYZ", category: "Retail", start: 1991, end: 20012 },
- { name: "DGF", category: "Finance", start: 1976, end: 2008 },
- { name: "LFT", category: "Retail", start: 1971, end: 1979 },
- { name: "MND", category: "Retail", start: 1995, end: 2010 },
- { name: "HCK", category: "Technology", start: 1987, end: 2011 },
- { name: "BMC", category: "Technology", start: 1989, end: 2009 },
- { name: "TIC", category: "Retail", start: 1993, end: 2005 },
- { name: "NAC", category: "Technology", start: 1991, end: 2010 },
- { name: "ITC", category: "Finance", start: 1998, end: 2016 }

];

a. Filter the retail companies

```
function arr(){
  let able= companies.filter((company)=>{
    return company.category=="Retail"
  })
  console.log(able)
}
companies = [
  { name: "ABC", category: "Finance", start: 1981, end: 2004 },
  { name: "XYZ", category: "Retail", start: 1991, end: 20012 },
  { name: "DGF", category: "Finance", start: 1976, end: 2008 },
  { name: "LFT", category: "Retail", start: 1971, end: 1979 },
  { name: "MND", category: "Retail", start: 1995, end: 2010 },
  { name: "HCK", category: "Technology", start: 1987, end: 2011 },
  { name: "BMC", category: "Technology", start: 1989, end: 2009 },
  { name: "TIC", category: "Retail", start: 1993, end: 2005 },
  { name: "NAC", category: "Technology", start: 1991, end: 2010 },
  { name: "ITC", category: "Finance", start: 1998, end: 2016 } ];
arr()
```

```
[
  { name: 'XYZ', category: 'Retail', start: 1991, end: 20012 },
  { name: 'LFT', category: 'Retail', start: 1971, end: 1979 },
  { name: 'MND', category: 'Retail', start: 1995, end: 2010 },
  { name: 'TIC', category: 'Retail', start: 1993, end: 2005 }
]
Hint: hit control+c anytime to enter REPL.
> []
```

b. Get the 80s companies from the array

```
function arr(){
  const able= companies.filter(company => company.start>=1980
  &&company.start<=1989);

  console.log(able)
}
companies = [
  { name: "ABC", category: "Finance", start: 1981, end: 2004 },
  { name: "XYZ", category: "Retail", start: 1991, end: 20012 },
  { name: "DGF", category: "Finance", start: 1976, end: 2008 },
  { name: "LFT", category: "Retail", start: 1971, end: 1979 },
  { name: "MND", category: "Retail", start: 1995, end: 2010 },
  { name: "HCK", category: "Technology", start: 1987, end: 2011 },
  { name: "BMC", category: "Technology", start: 1989, end: 2009 },
  { name: "TIC", category: "Retail", start: 1993, end: 2005 },
  { name: "NAC", category: "Technology", start: 1991, end: 2010 },
  { name: "ITC", category: "Finance", start: 1998, end: 2016 } ];
arr()
```

```
[
  { name: 'ABC', category: 'Finance', start: 1981, end: 2004 },
  { name: 'HCK', category: 'Technology', start: 1987, end: 2011 },
  { name: 'BMC', category: 'Technology', start: 1989, end: 2009 }
]
Hint: hit control+c anytime to enter REPL.
> []
```

c. Get the companies that lasted for 10 or more years

```
function arr(){
  const able= companies.filter((company) => {
    return company.end- company.start >=10;
  })

  console.log(able)
}
companies = [
  { name: "ABC", category: "Finance", start: 1981, end: 2004 },
  { name: "XYZ", category: "Retail", start: 1991, end: 20012 },
  { name: "DGF", category: "Finance", start: 1976, end: 2008 },
  { name: "LFT", category: "Retail", start: 1971, end: 1979 },
  { name: "MND", category: "Retail", start: 1995, end: 2010 },
  { name: "HCK", category: "Technology", start: 1987, end: 2011 },
  { name: "BMC", category: "Technology", start: 1989, end: 2009 },
  { name: "TIC", category: "Retail", start: 1993, end: 2005 },
  { name: "NAC", category: "Technology", start: 1991, end: 2010 },
  { name: "ITC", category: "Finance", start: 1998, end: 2016 } ];
arr()
```

```
[
  { name: 'ABC', category: 'Finance', start: 1981, end: 2004 },
  { name: 'XYZ', category: 'Retail', start: 1991, end: 20012 },
  { name: 'DGF', category: 'Finance', start: 1976, end: 2008 },
  { name: 'MND', category: 'Retail', start: 1995, end: 2010 },
  { name: 'HCK', category: 'Technology', start: 1987, end: 2011 },
  { name: 'BMC', category: 'Technology', start: 1989, end: 2009 },
  { name: 'TIC', category: 'Retail', start: 1993, end: 2005 },
  { name: 'NAC', category: 'Technology', start: 1991, end: 2010 },
  { name: 'ITC', category: 'Finance', start: 1998, end: 2016 }
]
Hint: hit control+c anytime to enter REPL.
> []
```