1. There is 3 type of variable is available 1.var (which is old version) 2.let 3.const

1.ok the differanse between var and let is

example= var fullname = rifat;

var fullname= rifatahmed;

console.log=(fullname);

print will = (rifatahmed)

meaning u can redeclare different things in the same veriable name using var.

let

let fullname = rifat;

let fullname2=rifatahmed;

console.log=(fullname)

print will= rifat

if u type fullname2

print will = rifatahmed

meaning u cant redeclare different things in same variable name using let.

(And also using let u can change variable value in same variable name.)

1. Now here is come const variable u have see that in let variable u can change value using same variable name .Now if u wanna fixed some variable value u can use

Conts variable meaning u cant change value using same variable name. meaning if u type

Const name = rifat ;

THEN if u type name= rifatahmed ;

U will get error;

Today practice  
let fullName = "Rifat";

let income = 0;

let expences= 0

console.log(fullName);

console.log(income);

Number Method

let yahoo = 10;

console.log(typeof(yahoo));

1. As u can see in console I typed ( **typeof** ) .if u use this method it will show u what type of data is there u have given .now u have typed 10 now if open console it will show u ( **number** ).

**But** in yahoo variable if type in double cotesion it will show u **string** -> **yahoo = “10”;**

2.now there is a constion that is if u want to transform an integer variable value in string value what will u do?

Let yahoo=10;

Yahoo = toString(yahoo);

Console.log(typeof(yahoo));

Now u will see the output showing string.

3.Now the same thing in goes to number also if u use parseInt .the string value will show u integer.

4.then if the value is like this yahoo=10.5; . then if u use parseFloat it will show u number.

5.then if u use console.log(yahoo.toFixed(2)) and variable is yahoo=5.67 . then output will 5.67 . if u use in function 1 then the output will show u 5.6 . meaning this function will show u how many number

Numbers u wanna take in .mane dosomic er pore kotogulo number dekhabe. Remember this function will return u string

6.but there is console.log(number.toPrecision(2)) . meaning ei function use korle kotogulo number output e show korbe ta dekhabe. Remember this function will return u string.

7.number method kono string value Jodi number e dekhaite chai console.log(number(“12”)). Tahole double cotesion kintu string output hobe ->number .

# concatenate strings

So this for adding some extra string in ur output Then lets practice .

Let firstName = “Ahmed”;

Let lastName= “Rifat”;

Document.write(“My name is”+ firstName + lastName);

Output= My name is Ahmed Rifat .  
  
  
 **Library functions for string**

1. **.length is a function that count number of character .**

Let text = “Bangladesh” // this variable has 10 character.

Document.write(“number of character” + text.length);

Output = Number of character 10 .

1. **pop up message**

Let text =prompt(“Enter your Name”)

Document.write(“number of character” + text.length);

Output will pop up a message .

**3.selected number**   
 let text = "Bangladesh"

document.write(text.charAt(2));

Output will = n

**4.Uppercase and lowercase**  
        let text = "Bangladesh"

         text = text.toUpperCase();

         document.write(text);  
Output = BANGLADESH

let text = "Bangladesh"

text = text.toLowerCase();

document.write(text);

Otuput=Bangladesh

**5.concat aksathe kora**   
 let text = "Bangladesh"

let text2 ="Good"

let text3 = "fine"

document.write(text.concat(text2));

output = Bangladesh good .

**6.slice**

let text = "Bangladesh"

let count =text.slice(0, 2)

document.write(count);

out put = Ba

meaning = 0 theke programing vasay 0 theke sob count st hoye to input dea 0,2 mane 0 theke 2 porjonto character nibe

let text = "Bangladesh"

let count =text.slice(2, 5)

document.write(count);

output = ngla .

Today practice

let firstName = "Ahmed"

let lastName = "Rifat"

let fullName =firstName+ lastName ;

document.write(fullName);

document.write(fullName.length);

document.write(fullName.toUpperCase());

document.write(fullName.slice(0,2));

output =AhmedRifat10AHMEDRIFATAh

# Arithmetic and assignment operator

Today practice   
  
 let firstNum = prompt("Enter Your First Number")

let secondNum = prompt("Enter Your Second Number")

firstNum= parseInt (firstNum,10) // 10 er jonno use korte hoise jate dosomic sonkha use kore tai

secondNum = parseInt(secondNum,10)

let sum,sub;

sum = firstNum + secondNum ;

document.write(firstNum +" + "+secondNum + " = " + sum + "<br/>");

sub = firstNum - secondNum ;

document.write(firstNum +" - "+secondNum + " = " + sub + "<br/>");

sub = firstNum \* secondNum ;

document.write(firstNum +" \* "+secondNum + " = " + sub + "<br/>");

sub = firstNum / secondNum ;

document.write(firstNum +" / "+secondNum + " = " + sub + "<br/>");

sub = firstNum % secondNum ;

document.write(firstNum +" % "+secondNum + " = " + sub + "<br/>");

output =

10 + 5 = 15  
10 - 5 = 5  
10 \* 5 = 50  
10 / 5 = 2  
10 % 5 = 0

Today practice

        let user =prompt("Enter Your Name")

         let income   =prompt("Enter Your Income")

         let expenses =prompt("Enter Your Expenses")

         let tax = income - 10 ;

         let balance = tax - expenses;

         let savings = balance - 0.20;

         document.write(user +"Your balnace after adding tax =" + tax +"<br/>");

         document.write(user+"Your balance after costing your expenses =" + balance+"<br/>");

         document.write(user +"Your Nit balance after savings =" +savings +"<br/>");

Today practice  
let letter = prompt("Enter a letter")

letter =letter.toLowerCase();

if(letter== "a" || letter=="e" || letter=="i" || letter=="o" || letter=="u")

{

    console.log("Vowel");

}

else{

    console.log("Consonent");

}

**Todays practice**

**let user = prompt("Enter Your Name");**

**let salary =prompt("Enter Your Salary");**

**let expenses = prompt("Enter your Expenses");**

**let tax = salary \* 0.1 ;**

**let netIncome = salary - tax ;**

**let balance = netIncome - expenses;**

**let savings = balance \* 0.2 ;**

**if (savings>= 1000)**

**{**

**console.log(user + "Excelent Your saving well ->" + savings)**

**}**

**else if(savings>=500)**

**{**

**console.log(user +"Your saving is decent ->" + savings)**

**}**

**else if(savings>=100)**

**{**

**console.log(user +"Oh no Your saving arent very well ->" + savings)**

**}**

**Ternary Operator**

**Simple vab**e kono condition make korar jonno if else use kori like this->

let number = Number(prompt("Enter Your Number"));

if(number>0){

    console.log("Positive")

}

else{

    console.log("Negative")

}

But ternary operator e ro simple vabe condition korte pari

let number = Number(prompt("Enter Your Number"));

let result = number > 0 ? "Positive" : "Negative"

console.log(result);

(ek line e condtion kora hoise Jodi number 0 er theke bor hoy to positive nahole negative )

**Edditional->** Jodi ternary use onek condition korte hoy tahole evabe

let result = number>0 ? "Positive": number<0 ? "Negative" : "zero";

console.log(result);

**( evabe onek condition kora jabe . remember =** number>0 ? "Positive": , etutuku ekta condition**)**

**Switch , case, break, default**

Eta akdom If elseif else er moto (**switch** er modhe **condition** rakhte hoy and ,**case** er modhe **value** dite hoy, **break** dite hoy condition e na hole condition **cholte** **thakbe** , then **default** er mane dhora jabe else er moto **like**->condition gula Jodi hoy to hobe **else** eta hobe

Akhon akta condition banabo jeta hobe 1 theke 5 digit er modhe kono akta digit hole iota string vabe dekhabe r Jodi 5 er bahire type kore tahole dekhabe not digited .

let number = Number(prompt("Enter Your Number"));

switch (number)

{

    case "0":

        console.log("Zero");

        break

    case "1":

        console.log("One");

        break

    case "2":

        console.log("two");

        break

    case "3":

        console.log("three");

        break

    case "4":

        console.log("Four");

        break

    case "1":

        console.log("Five");

        break

    default:

        console.log("NOt a digit")

}

**For loop in javascript**

For loop kaj korbe 3vabe kivabe? evabe -> for(starting,condition,update)

Here-> Bangladesh 10bar print korte hobe

**for( x = 1 ; x <=10 ; x = x+1){**

**document.write("Bangladesh");**

**}**

**document.write(“end”);**

(starting e x er man rakha holo , condition e rakha holo x er man 10 er soman hobe , update e dea holo j koto kore jog korbe )

For better understanding open 25 video  
Extra

Mone koro 1 theke 10 porjonto print korte hobe . so old process

**for( x = 1 ; x <=10 ; x = x+1){**

**document.write(“ ”+x); //ekhane x er man print korabo tai**

**}**

**document.write(“end”);**

practice

for(let x = 1 ; x<=5 ; x = x++){

let one = parseInt(prompt("Enter your first Number"));

let two = parseInt(prompt("Enter your second number"))

let sum = one + two;

console.log("Result ="+ sum);

}

**While loop**

While loop akdom for loop er motoi but iitu differants ase seta hoitase

Forloop ->

for(starting , condition ,update){

}

Whileloop->

starting

while(condition){

update

}

//mane while er surute starting dite hobe and condition vitore and update body er vitore

While->

//Akhon ami chaitasi j 1 theke 5 porjonto

let y= 1;

    let sum=0

    while( y <= 5 ){

document.write(“ ” + y)

        y = y + 1;

}

Output = 1 2 3 4 5

//AKhon 1 theke 10 porjonto er jogfol dekhate hobe

let y= 1;

    let sum=0

    while( y <= 10 ){

        y = y + 1;

sum = sum + y;

}

document.write(sum)

Output=55

//Akhon oi sokol sonkha er jog fol ber korte parbe jegulo 3 and 5 dara vag korle vag ses 0 hobe and eti 1 theke 100 er sonkha er modhe korte hobe

let y= 1;

    let sum=0

    while( y <= 100 ){

        if(y % 3 == 0 && y % 5 ==0)

        {

            sum =sum + y;

        }

        y = y + 1;

}

document.write(sum);

**Do-while loop**

**loop** ব্যবহার করা হয় এমন ক্ষেত্রে যেখানে **একবার হলেও loop এর ভিতরের কাজটা execute করতে চাস**, তারপর condition check করিস।

let y=10 ;

do{

    document.write("I love You");

    y++;

}while(y<=100);

Output= 100 bar print hobe

# Break and continue

সহজ ভাষায় মনে রাখার টিপস:

🛑 break → পুরো loop থামায়

🔁 continue → একবার skip করে আবার চালায়

Break:

In js -> for(let i=1;i<=100;i++)

{

if(i==10)

{

break;

}

document.write(" "+i)

}

Output-> 1 2 3 4 5 6 7 8 9

Continue:

for(let i=1;i<=100;i++)

{

if(i==10)

{

continue;

}

document.write(" "+i)

}

document.write('End')

Output:10 bade baki sob sonkha print korbe.

**Practice**

1 theke 100 porjonto loop chalabe kintu jokhon

Condition

Number % 3 == 0 then print fizz

Number % 5 == 0 then print BUzz

Number % 3 == 0 && number% 5==0

then print =FizzBuzz

output = 1 2 3fizz 4 5Buzz 6fizz …. 15fizzbuzz 16

In js ->

document.write("practice")

for(i=1;i<=100;i++)

{

document.write(' '+i);

if(i%3== 0 && i%5 == 0)

{

document.write('FizzBuzz')

}

else if(i%5 == 0)

{

document.write("BUzz")

}

else if( i%3 == 0)

{

document.write("Fizz")

}

}

**TRACK phase 6**

let user = prompt("Enter Your name");

let salary = prompt(parseInt("Enter Your salary"));

let expenses =prompt(parseInt("How many expenses You have ?"))

    if(isNaN(salary) || isNaN(expenses) || salary<=0 || expenses<=0)

    {

        document.write('Enter valid Enput')

    }

    else{

        let totalExpenses = 0;

        for(number = 1; number<=expenses ; number++ )

        {

            let newExpenses =parseFloat(prompt(`Enter Your Expenes ${number}`));

        }

        totalExpenses += newExpenses ;

    }

    const tax = salary \* 0.1;

    const netIncome = salary - tax ;

    const balance = netIncome - totalExpenses ;

    const saving = balance \* 0.2;

    let finalStatus = '';

    if(finalStatus >= 1000)

    {

        finalStatus = 'Amazing . Saving well ';

    }

    else if(finalStatus>=500)

    {

        finalStatus = 'Good . in condtion';

    }

    else if (finalStatus>= 100)

    {

        finalStatus = "Need improvment";

    }

    else{

        finalStatus = "Critical condition";

    }

    let overSpending = '';

    if(totalExpenses>salary)

    {

        overSpending = 'Warning ! Your Spanding Too much';

    }

    document.write("User"+user);

    document.write("Total Income"+salary);

    document.write("Total Expenses"+totalExpenses);

    document.write("Tax 10%"+ tax);

    document.write("Net Income After Tax"+netIncome);

    document.write("Remaining Balance"+balance);

    document.write("SAving 20% "+saving);

    document.write(finalStatus);

    if(overSpending)

    {

        document.write(overSpending);

    }

# Traditional function

Eta hoitase simple je amara age akta program lekhe output nitam oita rki akhon function er modhe rekhe onek bar kora jabe . like -> saveCategory($request) joto bar joto jaygay use kora jay

So in js->

function **tryPlus**(num1,num2)

{

    var result = num1 + num2 ;

    document.write("Result"+ result+ "<br>")

}

**tryPlus**(parseInt(prompt("Enter First number for Sub")),parseInt(prompt("Enter second for Sub")))

# IIFEs and function expression

Immediately Invokeable Function Expressions -> er mane holo kivabe kono function ke immediately call kora jay

Simple function ->

Function display(){

Console.log(“hello”);

}

Immediately function ->

**(**Function display(){

Console.log(“hello”);

}**)();**

Evabe dile call hoye jabe . and Jodi chai method padhano dorkar hoy tokhon

**(**Function display(**message**){

Console.log(**message**);

}**)(“hello”);**

Practice

(function display(number){

console.log("Result:" + number )

})(6+7);

Output = 13

Function Expression ->holo kono function ke akta variable er modhe rekhe oi variable take call kora

Let display=function display(){

Console.log(“hello”);

}

display()

Output= hello

# How to create and use array in push pop

Basic array jevabe use korsi php te -> let names =[‘anis’,’rubel’]

Names.push(“sokina”); ->madhome array te array te data add kora jay

Name.pop() ->er madhome ses er data remove kora jay

R akta variable er pashe onno variable jukto korar jonno .concat() use korte hobe.

# How to loop an Array

# Methods

var names =["Anis" ,"Raad", "jibon"]

names.**shift() Shift**

console.log(names);

out put = Raad Jibon

shift method er kaj hocce prothom data ke remove kore dibe

var names =["Anis" ,"Raad", "jibon"]

names.shift()

console.log(names);

**names.unshift("Sagor") unshift**

**console.log(names)**

output = sagor Raad Jibon

**unshift method er kaj hoitase notun kono data ke push kora**

**Splice**

Etar madhome kono kichu add kora jay kono kichu remove kora jay -> **(index number , remove index number , add)**

names.splice(2,0 ,”karim” ,”Hakim” )

previeus output = Rahim Rohan Sakil

Now output = Rahim Rohan Sakil Karim Hakim

Jodi chai splice e evabe dei? (2,1, “karim”, “Hakim”)

Tahole ses er index take remove korbe and 2 dile ses er 2 ta index remove korbe.

**Slice**

Ei method kono kichu remove korar jonno use kora hoy

var names =["Anis" ,"Raad", "jibon"]

var newArray = names.slice(1);

console.log (newArray);

Otuput = Raad Jibon

BUT slice kintu main array er theke remove kore na seh notun array banay . mane ami Jodi console.log(names) dei slice er niche tahole fist e slice kora output 2ta name asbe and niche 3ta nam asbe .

**Sort**

Var shirtedName =names.sort()

Console.log(names);

Dile sob string data gulo serial wise kore nibe Like A B C D

Akhon same jinis Jodi revers korte chai tokhon D C B A

Var sortedName = names.sort()

names.reverse()

Console.log(names);

# One dimensional array | Task 8

var scores = [40 , 50, 60,20,30,70,80];

let mark=heightestScores(scores);

function heightestScores(scores)

{

    let max = scores[0];

    for(let x=1 ; x<scores.length ; x++)

    {

        if(max<scores[x])

        {

            max = scores[x];

        }

    }

    return max;

}

console.log(mark)

Output = 80

# Two dimensional array | Task 9

**let playersInfo =[**

**["Ashraful",5],**

**["Samiul",10],**

**["Lojim",50],**

**["Ajim",80],**

**["Karim",100]**

**];**

**function heightestRunScores(playersInfo)**

**{**

**let heightestScorerName = playersInfo[0][0];**

**let heightestScores = playersInfo[0][1];**

**for(let x=1; x<playersInfo.length;x++)**

**{**

**if (heightestScores<playersInfo[x][1])**

**{**

**heightestScores = playersInfo[x][1];**

**heightestScorerName = playersInfo[x][0];**

**}**

**}**

**return heightestScorerName;**

**}**

**let name = heightestRunScores(playersInfo)**

**console.log(name);**

### 👉 playersInfo[0][0]

এইটা প্রথম প্লেয়ারের নাম: Ashraful

### 👉 playersInfo[0][1]

এইটা প্রথম প্লেয়ারের স্কোর: 5

তুমি শুরুতে ধরে নিচ্ছো, Ashraful-ই highest scorer।  
তারপর লুপে বাকি সবাইকে চেক করে দেখছো যদি কেউ তার থেকে বেশি রান করে তাহলে **heightestScorerName আর heightestScores আপডেট করছো**।

### ⚠️ Important:

return সবসময় **loop এর বাইরে** লিখতে হবে — কারণ আমরা চাই **সবগুলো স্কোর চেক করে তারপর** সিদ্ধান্ত নেওয়া হোক কে বেশি।

# Budget tracker add array

let user = prompt("Enter your name");

let salary = parseFloat(prompt("Enter your salary"));

let expenses = parseInt(prompt("How many expenses do you have?"));

if (isNaN(salary) || isNaN(expenses) || salary <= 0 || expenses <= 0) {

document.write('Enter valid input');

} else {

let totalExpenses = 0;

let arrayExpenses = [];

for (let number = 1; number <= expenses; number++) {

let newExpense = parseFloat(prompt(`Enter your expense ${number}`));

arrayExpenses.push(newExpense);

}

for (let i = 0; i < arrayExpenses.length; i++) {

totalExpenses += arrayExpenses[i];

}

const tax = salary \* 0.1;

const netIncome = salary - tax;

const balance = netIncome - totalExpenses;

const saving = balance \* 0.2;

let finalStatus = "";

if (saving >= 1000) {

finalStatus = "Amazing. Saving well";

} else if (saving >= 500) {

finalStatus = "Good. In condition";

} else if (saving >= 100) {

finalStatus = "Need improvement";

} else {

finalStatus = "Critical condition";

}

let overSpending = "";

if (totalExpenses > salary) {

overSpending = "Warning! You are spending too much.";

}

document.write("User: " + user + "<br>");

document.write("Total Income: " + salary + "<br>");

document.write("Total Expenses: " + totalExpenses + "<br>");

document.write("Tax (10%): " + tax + "<br>");

document.write("Net Income After Tax: " + netIncome + "<br>");

document.write("Remaining Balance: " + balance + "<br>");

document.write("Saving (20%): " + saving + "<br>");

document.write("Status: " + finalStatus + "<br>");

if (overSpending) {

document.write(overSpending);

}

}

Output=   
User: Rifat  
Total Income: 10000  
Total Expenses: 9650  
Tax (10%): 1000  
Net Income After Tax: 9000  
Remaining Balance: -650  
Saving (20%): -130  
Status: Critical condition

# How to create and use object

Basic ->

Var student1 = {

Name:md Rifat

Age :22

Cgpa: 3.98

Lang:[“Bangla”,”hindi”,”English”]

}

Console.log(student1.name);

Akhon kotha hoitase j evabe sob ak ak joner data save korte onek somay + code korte hobe hobe . To akta **constractor function** make korte hobe basically template er moto kaj korbe like this->

function createStudent(name,age,cgpa,lang)

{

    this.name = name;

    this.age  = age;

    this.cgpa = cgpa;

    this.lang = lang;

}

let student1 = new createStudent("Rifat","22",3.80,["Bangla","English","Hindi"]);

create student e peramiter padhano hoitase and recive kore name er modhe rakhtese

but akhon Jodi print korte gelo kosto hobe karon evabe lekh te hobe ->

console.log(student1.name);

console.log(student1.age);

mane sobgula alada kore lekhte hobe tai evabe jate na korte hoy tai object er modhe function make korte hobe

function createStudent(name,age,cgpa,lang)

{

    this.name = name;

    this.age  = age;

    this.cgpa = cgpa;

    this.lang = lang;

    this.display = function()

    {

        console.log(this.name);

        console.log(this.age);

        console.log(this.cgpa);

        console.log(this.lang);

    }

}

let student1 = new createStudent("Rifat","22",3.80,["Bangla","English","Hindi"]);

student1.display();

# Math Object

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# Guessing Game using Math Object

let numberOfWin = 0;

let numberOflos = 0;

for(let i=0; i<5 ; i++)

{

    let gusssNumber = parseInt( prompt("Enter The Gussing random Number"));

    let randomNumber = Math.floor( Math.random() \* 5) + 1;

    if(gusssNumber == randomNumber)

    {

        console.log("You have Won The random Number Was:"+randomNumber);

        numberOfWin++;

    }

    else

    {

        console.log("You have lost The random Number was:"+randomNumber);

        numberOflos++;

    }

}

document.write("YOu have won total"+numberOfWin+"</br>");

document.write("You have lost total"+numberOflos);

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let randomNumber = Math.floor( Math.random() \* 5) + 1;

👉 এখানে একটা **random number generate** করা হচ্ছে ১ থেকে ৫ এর মধ্যে।

* Math.random() → 0 থেকে 0.999999 এর মধ্যে random float number দেয়।
* Math.random() \* 5 → 0 থেকে 4.9999 এর মধ্যে।
* Math.floor(...) → নিচের দিকে গোল করে দেয় → 0 to 4
* তারপর + 1 → 1 to 5 এর মধ্যে random number তৈরি হয়।

✅ Example: ইউজারের luck অনুযায়ী বের হতে পারে 1, 2, 3, 4, 5 যেকোনো একটি।

# Budget tracker phase 8 - add function

function getUserInput(promptMessage , isNumber = false)

{

let userInput = prompt(promptMessage);

return isNumber ? parseFloat(userInput) : userInput ;

}

function getExpenses(expenses)

{

    const arrayExpenses = [] ;

      for(let number = 1; number<=expenses ; number++ )

        {

            let newExpenses =getUserInput(`Enter Your Expenes ${number}`,true);

            arrayExpenses.push(newExpenses);

        }

        return arrayExpenses ;

}

function calculateTotalExpenses(arrayExpenses)

{

    let totalExpenses = 0;

        for( let array= 0; array<arrayExpenses.length; array++)

        {

            totalExpenses += arrayExpenses[array];

        }

        return totalExpenses ;

}

function getFinalResult(user , salary , totalExpenses , tax , netIncome , balance , saving , finalStatus)

{

        let overSpending = '';

    if(totalExpenses>salary)

    {

        overSpending = 'Warning ! Your Spanding Too much';

    }

    document.write("User"+user +"<br>");

    document.write("Total Income"+salary+"<br>");

    document.write("Total Expenses"+totalExpenses+"<br>");

    document.write("Tax 10%"+ tax+"<br>");

    document.write("Net Income After Tax"+netIncome+"<br>");

    document.write("Remaining Balance"+balance+"<br>");

    document.write("SAving 20% "+saving+"<br>");

    document.write(finalStatus+"<br>");

    if(overSpending)

    {

        document.write(overSpending);

    }

}

function getFinancialStatus(saving)

{

    let finalStatus = '';

    if(saving >= 1000)

    {

        finalStatus = 'Amazing . Saving well ';

    }

    else if(saving>=500)

    {

        finalStatus = 'Good . in condtion';

    }

    else if (saving>= 100)

    {

        finalStatus = "Need improvment";

    }

    else{

        finalStatus = "Critical condition";

    }

    return finalStatus;

}

function getBudgetTracker()

{

let user = getUserInput("Enter Your Name");

let salary = getUserInput("Enter Your salary" , true);

let expenses =getUserInput("How many expenses You have ?" , true);

    if(isNaN(salary) || isNaN(expenses) || salary<=0 || expenses<=0)

    {

        document.write('Enter valid Enput')

        return;

    }

    else{

        let arrayExpenses = getExpenses(expenses);

        let totalExpenses = calculateTotalExpenses(arrayExpenses);

    const tax = salary \* 0.1;

    const netIncome = salary - tax ;

    const balance = netIncome - totalExpenses ;

    const saving = balance \* 0.2;

    let finalStatus = getFinancialStatus(saving);

     getFinalResult(user , salary , totalExpenses , tax , netIncome , balance , saving , finalStatus);

}

}

getBudgetTracker()

**JSON**

Practice ->

    "friends":[

        {

            "name":"Anis",

            "age":25

        },

        {

            "name":"Rahul",

            "age":26

        }

    ],

"Students":[

    {

        "name":"Ahmed",

        "age":1,

        "cgpa":5 ,

        "language":["Bangla","English"],

        "frends":2

    }

]

**Validation**

Json data ke validate korar jonno json formatter search koro browser e then u can check nnaki

Access

In json file u have data this->  
        "friends":[

        {

            "name":"Anis",

            "age":25

        },

        {

            "name":"Rahul",

            "age":26

        }

    ],

Now in another file First import or link then json file with js then ->

console.log(data.friends[0]);

output =

            "name":"Anis",

            "age":25

Modify

In json file u have data this->  
        "friends":[

        {

            "name":"Anis",

            "age":25

        },

        {

            "name":"Rahul",

            "age":26

        }

    ],

Now then add new value->

data.friends[0].name = "Rahman";

console.log(data.friends[0].name);

Delete

Json e jei data delete korte chai oitar samne delete likhe dilei oi data remove hoye jabe

delete data.friends[0].name ;

path

onek somay onek boro data ke path die then acess korte hoy to . boro data theke dekhe dekhe khuje ber kore right path dea ittu complex tai right path dear jonno browser e -> json path finder e jeye full code die click click then upore path

asbe .

# jsonschema

eta hoitase ak dhoroner validation bola jay tmi 2 data diba ja set kora “name string” “age integer“ to input near time e ei 2ta data must dite hobe and name=string and age=integer dite hobe na hole error hobe .

toh schema make korar jonno simple object banao then browser e jao then -> online json to schema converter . paste there the code then enter u will see the schma .

now for check u can goto->json scema validator . paste and check

# Web Storage API | localStorage, sessionStorage, cookie

Kono data permarent save korte hole localStorage er madhome use korte hobe ->

Toh js file e evabe data set korte hoy and remember localstorage e key and value akare save hoy so -> **localStorage.setItem("user\_name","Harun Khan");**

Data set kora hoy gelo akhono kono data ami check korbo mane get korbo setar jonno ->

**const userName= localStorage.getItem("user\_name")**

**console.log(userName);**

akhon kono data er value change or update korte chaitasi tahole ->

**console.log(userName);**

**localStorage.setItem("user\_name","Mia Khan");**

akhon kono data ke or remove korte chaitase tahole removeItem() use korte hobe ->

**localStorage.removeItem("user\_name")**

Now kono key er modhe multiple value rakhte hole json er madhome rakhte hobe ->

**const countries = ["Japan","America","Borisal"];**

**localStorage.setItem("countries",JSON.stringify(countries));**

akhon ei data ke get korte hole->

**const countriesList =JSON.parse(localStorage.getItem("countries"));**

**console.log(countriesList);**

sob clear er jonno ->**localStrorage.clear()**

**Session**

sessionStorage akdom er set get update delete sob same to same sessionStorage er moto

sessionStorage.setItem("user\_name","Alu Khan");

const userNames=sessionStorage.getItem("user\_name");

# cookie

eta ekta time limit er jonno use kora hoy **document.cookie**   
oi time limit ses hoy gele auto remove hoy jabe .