

Assignment 4(SCOPE)

Dry run the below code pieces and try to find the output

(A)

```
function example() {  
  var x = 10;  
  if (true) {  
    var x = 20;  
  }  
  console.log(x);  
}  
example();
```

Output:-20

(B)

```
function example() {  
  let x = 10;  
  if (true) {  
    let x = 20;  
  }  
  console.log(x);  
}  
example();
```

Output:-10

(C)

```
function outer() {  
  var x = 10;  
  function inner() {  
    console.log(x);  
  }  
  inner();  
}  
outer();
```

Output:-10

(D)

```
const a = 2;  
{  
  const a = 10;  
  {  
    const a = 90;  
    console.log(a);  
  }  
}
```

```
    }  
  }
```

Output:-90

(E)

```
const a = 2;  
{  
  const a = 10;  
  {  
    console.log(a);  
  }  
}
```

Output:-10

(F)

```
const a = 2;  
{  
  {  
    console.log(a);  
  }  
}
```

Output:-2

(G)

```
var x = 10;  
function example(x) {  
  console.log(x);  
}  
example(5);
```

Output:-5

(H)

```
var x = 10;  
function example() {  
  console.log(x);  
}  
example();
```

Output:-10

5. Which code is valid and why?

```
let a = 20;  
{  
  var a = 10;  
}
```

```
var a = 20;
{
  let a = 10;
}
console.log(a);
```

Second is valid , output is 20,

(I)

```
var x = 10;
function outer() {
  function inner() {
    console.log(x);
  }
  return inner;
}
var closure = outer();
closure();
```

Output:-10

(J)

```
function example() {
  console.log(x);
  var x = 10;
}
example();
```

Output:-undefined

(K)

```
console.log(foo());
console.log(bar());
function foo() {
  return "I'm foo!";
}
var bar = function () {
  return "I'm bar!";
};
```

Output:-I'm foo!

(L)

What is

1. Scope chain

Scope chains establish the scope for a given function. Each function defined has its own nested scope, and any function defined within another function has a local scope which is linked to the outer function — this link is called the chain.

What is illegal shadowing

So, if we try to shadow `let` variable by `var` variable, it is known as Illegal Shadowing and it will give the error as "variable is already defined." Example: Javascript