

Closure Assignments

Part 1: Conceptual Questions

Q1. What is a closure in JavaScript?

Q2. Why are closures useful? Give a real-world example.

Q3. Can a closure access variables from its outer function after the outer function has returned? Explain.

Q4. What are some common use-cases of closures in web development?

Q5. Is closure related to memory leaks? If yes, how?

Part 2: Code Output Questions

Q6.

```
function outer() {  
  let count = 0;  
  return function () {  
    count++;  
    console.log(count);  
  };  
}
```

```
let counter = outer();  
counter();  
counter();
```

Q7.

```
function makeAdder(x) {  
  return function(y) {  
    return x + y;  
  };  
}
```

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```
};  
}
```

```
let add5 = makeAdder(5);
```

```
console.log(add5(10));
```

Q8.

```
for (var i = 0; i < 3; i++) {  
  setTimeout(function () {  
    console.log(i);  
  }, 1000);  
}
```

Q9.

```
let funcs = [];  
for (let i = 0; i < 3; i++) {  
  funcs.push(function () {  
    console.log(i);  
  });  
}  
funcs[0]();  
funcs[1]();  
funcs[2]();
```

Part 3: Fix the Code

Q10. The following code logs "3" three times. Fix it to log 0, 1, 2 instead.

```
for (var i = 0; i < 3; i++) {  
  setTimeout(function () {  
    console.log(i);
```