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[1] (a) Write the following expression in Lisp.

$$10 \div 3 + 45 * 8$$

```
> (+ (- 10 3) (* 45 8))  
> (+ (- 10 3) (* 45 8))
```

(b) In Lisp, the div operator is not defined, but the operators mod is defined.

$$10 \bmod 3 = 1$$

write a function div that simulates the "div" operator. The function div will receive two integers n & m and returns the value n div m.

```
> (defun div (n m)
  (if (= (mod n m) 0) 0
      (+ 1 (div n (- m 1)))))
```

```
if (= n % m 0)
  return 0
else
  return (+ div(n, m-1))
```

[2] The 3 key points that characterizes the imperative (procedural) paradigm are:

1. instructions are executed sequentially
2. variables are used to represent memory locations
3. assignment statements are used to change the value of a variable.

While the key points that characterizes the Object Oriented (procedural) paradigm are:

1. ~~Encapsulation of Data & Function~~ Encapsulation of Data & Function
2. Inheritance
3. Polymorphism

[3] (a) Given the following piece of code in C:

```
float jump(float, float);  
int n;  
float x, y;  
const int m=10;  
float z=jump(x, y);  
n=m;
```

→ table for user-defined names.

Build the symbol table after the above code is executed.

name	Type	Value
Jump	function name float	
n	int	10
x	float	0
y	float	0
m	const int	10
z	float	Jump(x, y)

(b) What are the tokens generated by the following code?

```
int N=100;  
N+++N;
```

int
N
=
100
;
N
+
+
N
;-