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Assignment 1 Part 1:

1. 3 dimensions of variability across programming paradigms:
   a. **Control Flow:** how executions flows within the program
   b. **Coupling and Reuse:** how easily code can be reused in different contexts
   c. **Syntax:** how natural brief readable is the expression of code given the syntax of the language. Can the syntax of language be extended by the programmer?
2. The following are the types of the functions:

(a)	`(x:number, y:number)=> number = (x,y)=> x + y;`	numbers
(b)	`<T> (x:T[]) =>T=(x)=> x[0];`	any
(c)	`(x:boolean, y:number) =>number = (x,y)=> x ? y : -y`	number

3. It is another way to write some programming language sentences, that mean the same thing (gets the same result) but it a shorter and more elegant way. It means that if during a program run the result is known and there is no need to continue check the rest, the shortcut semantics concept causes the program to stop on the first possible option and return the answer. It can be used on boolean functions, like "**every**" and "**some**"- if you find the first element that satisfies the predicate, you can stop the run and not go threw all the elements.
   a. Example:

```
const throwOnZero = x => { if (x > 0) return true; else throw false;}
let a = [1,0]
try {
    a.some(throwOnZero);
}
catch (e) {
    e;
}
```

   b. In the example above, if the predicate has been satisfied an exception will be thrown, which will make the program run stop checking the rest of the array and continue with the program, instead of wasting time on checking the rest, when the answer is already known.