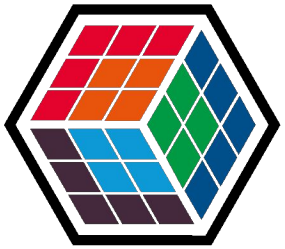

THE DEVELOPER'S CONFERENCE

Clean Code e Clean Architecture no Front-End

Wesley W. de Azevedo Palmeira
Senior Software Developer

Quem sou eu?

THE DEVELOPER'S CONFERENCE

- Wesley Wevertton de Azevedo Palmeira, 29 anos
- Esposo, Nordestino (Campina Grande - PB) e Baterista
- Graduado em Engenharia de computação (IFPB - CG)
- Pouco mais de 8 anos no mercado de TI
- Atualmente Desenvolvedor Sênior / Líder Técnico

beta learning

ClearSale

Agenda

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- Motivação
- Aplicação "Exemplo"
- Código Limpo
  - Conceito
  - Nomes
  - Condicionais
  - Funções
- Arquitetura Limpa
  - Conceito
  - Princípio da Responsabilidade única (**S**ingle responsibility principle)
  - Princípio do aberto/fechado (**O**pen–closed principle)
  - Princípio da Inversão de dependência (**D**ependency Inversion principle)
- Conclusão

Motivação

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No início do projeto…

Putz, muito easy, ta funcionando, terminei em 2 horas!!

Código RUIM

Deu trabalho em, levei 2 dias para fazer, porém ta lindo

Código BOM

Motivação

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Alguns meses depois….

Impossível entender, mexo em um local, quebra em outro WTF

Código RUIM

Muito bom mexer nesse projeto, tá tudo muito organizado!!

Código BOM

Motivação

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Aplicação "Exemplo"

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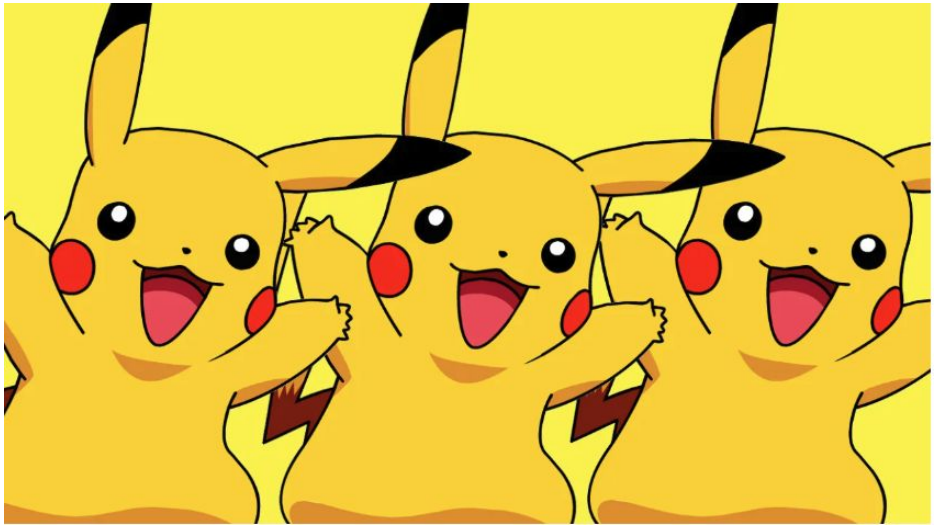
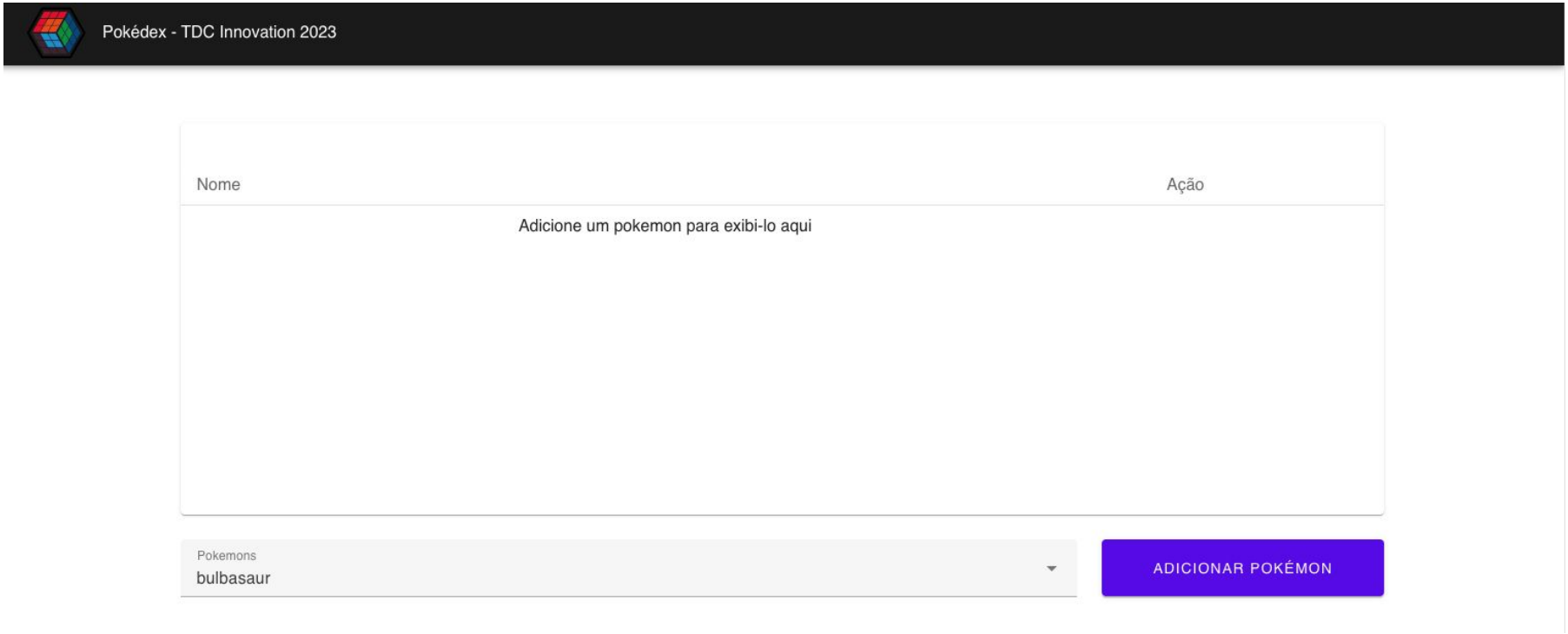
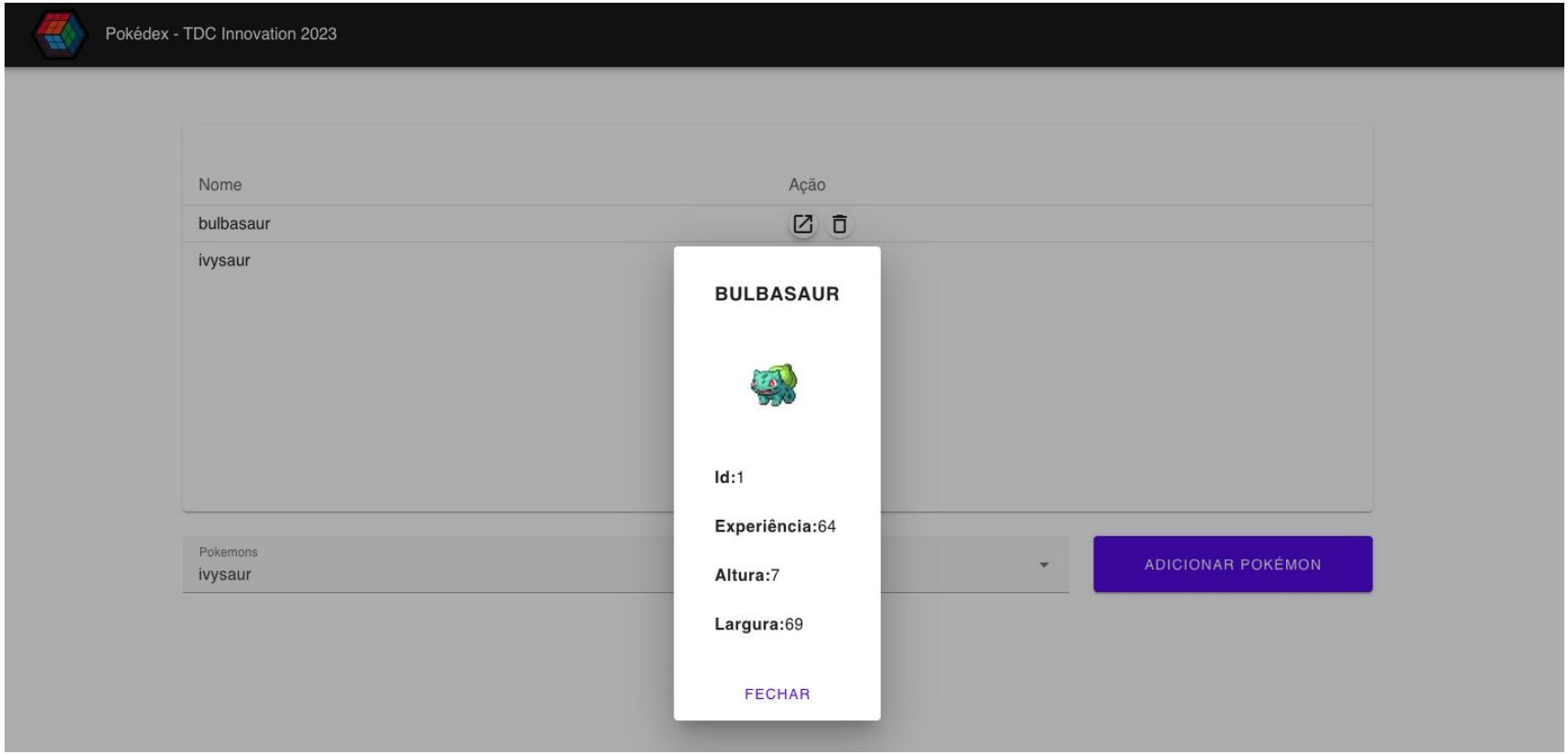
- Mini Pokédex utilizando a https://pokeapi.co/
- Vite + Vue3 + Vuetify + Typescript
- Será possível adicionar, remover e visualizar pokémons dessa lista



Aplicação "Exemplo"



Aplicação "Exemplo"



Código Limpo

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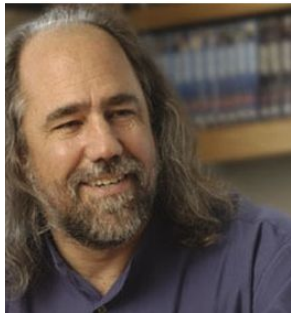
"Um código limpo é simples e direto"

Grady Brooch, autor do livro Software Engineering with Ada

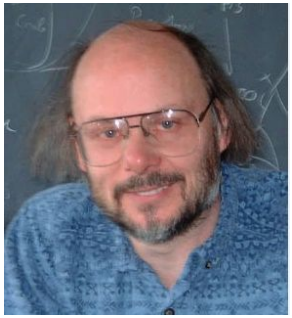


Código Limpo

THE DEVELOPER'S CONFERENCE

"O código limpo faz bem apenas uma coisa"

Bjarne Stroustrup, criador do C++

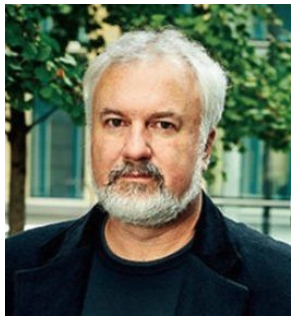


Código Limpo

THE DEVELOPER'S CONFERENCE

"Um código limpo sempre parece que foi escrito por alguém que se importava"

Michael Feathers, autor do livro Working Effectively with Legacy Code



Nomes

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Ruim

```
114  type type1 = {
115    name: string;
116    url: string;
117  };
118
119  type type2 = {
120    id: string;
121    name: string;
122    xp: string;
123    height: string;
124    weight: string;
125    photo: string;
126  };
127
128  const List1 = ref<type1[]>([]);
129  const List2 = ref<type1[]>([]);
```

Bom

```
114  type PokemonCompact = {
115    name: string;
116    url: string;
117  };
118
119  type Pokemon = {
120    id: string;
121    name: string;
122    experience: string;
123    height: string;
124    weight: string;
125    photo: string;
126  };
127
128  const pokemonTableList = ref<PokemonCompact[]>([]);
129  const pokemonSelectList = ref<PokemonCompact[]>([]);
```

Utilize nomes descritivos

Evite abreviações/codificações

Mantenha um padrão

Nomes

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Ruim

```
134  const add = () => {
135    if (pokemonSelectModel.value) {
136      pokemonTableList.value.push(
137        pokemonSelectModel.value
138      );
139    }
140  };
141
142  const remove = (i: PokemonCompact) => {
143    const index = pokemonTableList.value.findIndex(
144      (el) => el.name === i.name
145    );
146    pokemonTableList.value.splice(
147      index, 1
148    );
149  };
```

Bom

```
134  const pushPokemonToTable = () => {
135    if (pokemonSelectModel.value) {
136      pokemonTableList.value.push(
137        pokemonSelectModel.value
138      );
139    }
140  };
141
142  const removePokemonFromTable = (
143    pokemonToRemove: PokemonCompact
144  ) => {
145    const pokemonIndex = pokemonTableList.value.findIndex(
146      (pokemon) => pokemon.name === pokemonToRemove.name
147    );
148    pokemonTableList.value.splice(
149      pokemonIndex, 1
150    );
151  };
```

Nomes de métodos/funções devem começar com verbo

Evite mapas mentais

Condicionais

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Ruim

```
const add = () => {
  if (!current.value || !current.value.name) {
    alert('Escolha um pokemon para adicionar na tabela')
  }
  else if(
    List1.value.findIndex(
      el => el.name === current.value?.name
    ) === -1){
    List1.value.push(
      current.value
    );
  } else {
    alert('Pokemon ja existe na tabela')
  }
};
```

Evite negações de condicionais

Encapsule condicionais

Evite aninhamento de condicionais

Bom

```
const pushPokemonToTable = () => {
  if (validatePokemon(pokemonSelectModel.value)) {
    pushPokemonToTableList(pokemonSelectModel.value)
  } else {
    alert('Escolha um pokemon para adicionar na tabela')
  }
};
```

```
const pushPokemonToTableList = (pokemon: PokemonCompact) => {
  if(checkHasPokemonOnTable(pokemon)) {
      alert('Pokemon ja existe na tabela')
  } else {
      pokemonTableList.value.push(
        pokemon
      );
  }
}
```

Funções

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Crie funções pequenas (20 linhas no máximo)

```
const removePokemonFromTable = (
  pokemonToRemove: PokemonCompact
) => {
  const pokemonIndex = getPokemonTableIndex(pokemonToRemove);
  pokemonTableList.value.splice(pokemonIndex, 1);
};
```

O número ideal de parâmetros de uma função é ZERO

Devem fazer apenas umas coisa

Arquitetura Limpa

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Padrão arquitetural com o objetivo de promover a implementação de sistemas que favorecem a reusabilidade de código, coesão, independência de tecnologia e testabilidade.

Arquitetura Limpa

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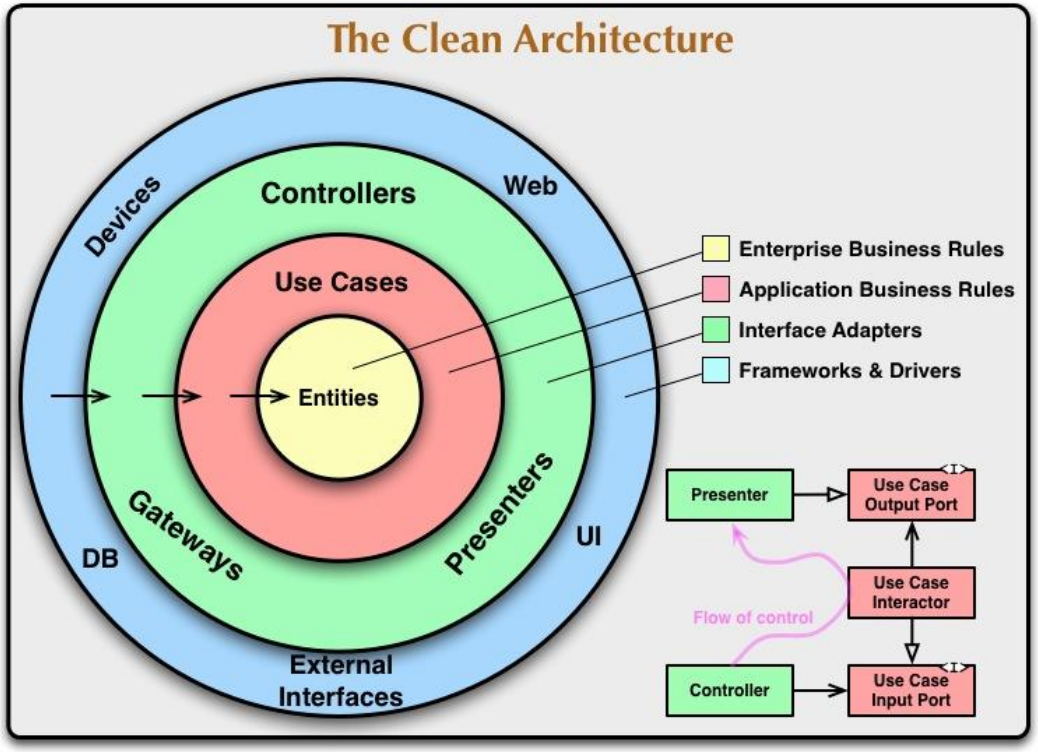

Arquitetura Limpa

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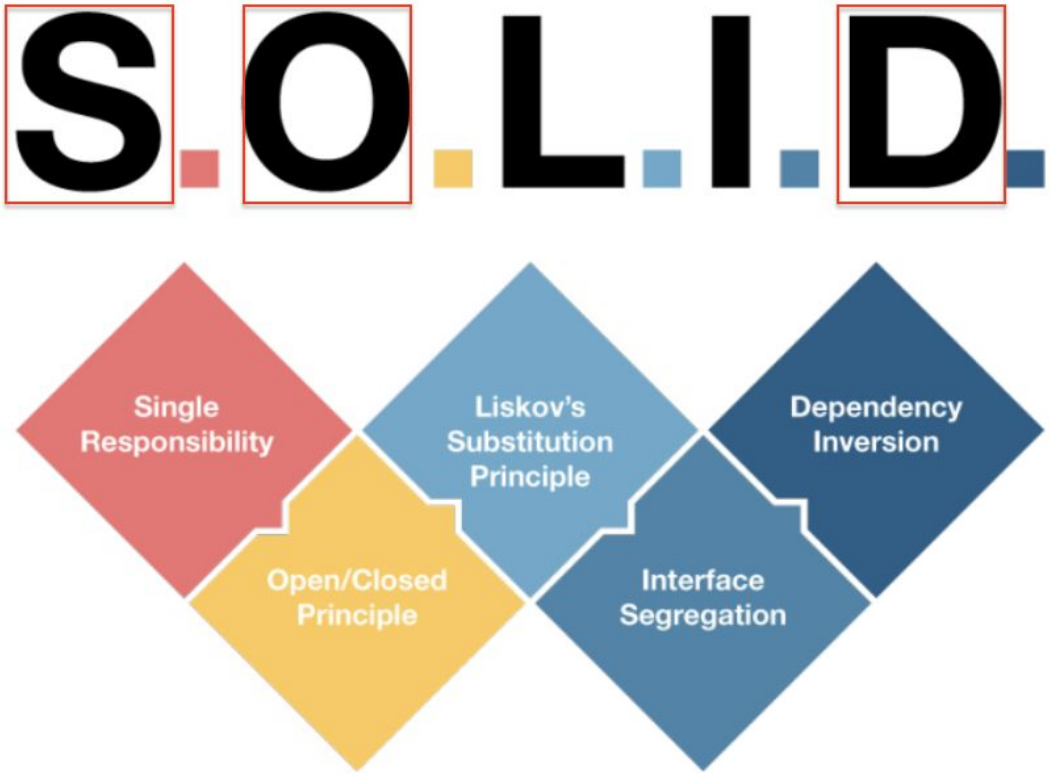

Princípio da Responsabilidade única (Single responsibility principle)

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Cada módulo ou classe deve ter responsabilidade sobre uma única parte da funcionalidade fornecida pelo software.

Princípio da Responsabilidade única (Single responsibility principle)

THE DEVELOPER'S CONFERENCE

Problemas da nossa aplicação:

- Tudo dentro do App.vue
- HTML do App.vue com 104 linhas
- Várias responsabilidades em um mesmo arquivo (Regra de negócio, visualização e consultas a API)

Princípio da Responsabilidade única (Single responsibility principle)

THE DEVELOPER'S CONFERENCE

Passo 1

```
<template>
  <v-app>
    <Header />
    <v-container class="mt-16">
      <v-row>
        <v-col cols="12">
          <PokemonTable
            :pokemons="pokemonTableList"
            @details="showPokemonDetails"
            @remove="removePokemonFromTable"
          />
        </v-col>
      </v-row>
      <PokemonSelect
        :pokemon-select-list="pokemonSelectList"
        @push="pushPokemonToTable"
      />
    </v-container>
    <PokemonDialog
      :show="showDetailsDialog"
      :pokemon-details="pokemonDetailsModel"
      @hide="$event => showDetailsDialog = false"
    />
  </v-app>
</template>
```

Princípio da Responsabilidade única (Single responsibility principle)

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Passo 2

```
export default class Pokedex {
    pokemons: PokemonCompact[];
    constructor() {
        this.pokemons = [];
    }
    private getPokemonIndex (pokemonToFind: PokemonCompact) {
        return this.pokemons.findIndex(
          (pokemon) => pokemon.name === pokemonToFind.name
        );
    };
    private checkHasPokemon(pokemonToCheck?: PokemonCompact) {
        return (
            this.pokemons.findIndex(
              (pokemon) => pokemon.name === pokemonToCheck?.name
            ) !== -1
        );
    }
```

```
    setPokemons(pokemons: PokemonCompact[]) {
        this.pokemons = pokemons;
    }
    pushPokemon(pokemon: PokemonCompact) {
        if (this.checkHasPokemon(pokemon)) {
            throw(new Error('Pokemon ja existe na tabela'));
        } else {
            this.pokemons.push(pokemon);
        }
    }
    removePokemon(pokemon: PokemonCompact) {
        const pokemonIndex = this.getPokemonIndex(pokemon);
        this.pokemons.splice(pokemonIndex, 1);
    }
}
```

Princípio da Responsabilidade única (Single responsibility principle)

THE DEVELOPER'S CONFERENCE

Passo 3

```
export default class PokemonGatewayHttp {
  private parsePokemonDetails(pokemonData: PokemonData) {
    return {
      id: pokemonData.id,
      name: pokemonData.name,
      experience: pokemonData.base_experience,
      height: pokemonData.height,
      weight: pokemonData.weight,
      photo: pokemonData.sprites.front_default,
    };
  }

  async getPokemons() {
    const { data } = await axios.get("https://pokeapi.co/api/v2/pokemon");
    return data.results;
  }

  async getPokemonByUrl(pokemonUrl: string) {
    const { data } = await axios.get(pokemonUrl);
    const pokemonParsed = this.parsePokemonDetails(data);
    return pokemonParsed;
  }
}
```

Princípio da Responsabilidade única (Single responsibility principle)

THE DEVELOPER'S CONFERENCE

```
37  const pokemon = ref<Pokemon>();
38  const showDetailsDialog = ref(false);
39  const tablePokedex = reactive(new Pokedex());
40  const selectPokedex = reactive(new Pokedex());
41  const pokemonsGateway = new PokemonGatewayHttp();
42
43  onMounted(async () => {
44    const pokemons = await pokemonsGateway.getPokemons();
45    selectPokedex.setPokemons(pokemons);
46  });
47  const pushPokemon = (pokemon: PokemonCompact) => {
48    try {
49      tablePokedex.pushPokemon(pokemon);
50    } catch (error) {
51      alert(error);
52    }
53  }
54  const removePokemon = (pokemonToRemove: PokemonCompact) => {
55    tablePokedex.removePokemon(pokemonToRemove);
56  };
57  const showPokemonDetails = async (pokemonUrl: string) => {
58    pokemon.value = await pokemonsGateway.getPokemonByUrl(pokemonUrl)
59    showDetailsDialog.value = true;
60  };
61  </script>
```

Princípio do aberto/fechado (Open–closed principle)

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Entidades de software devem ser abertas para extensão, mas fechadas para modificação.

Princípio do aberto/fechado (Open–closed principle)

THE DEVELOPER'S CONFERENCE

```
<template>
  <v-row>
    <v-col cols="9">
      <v-select
        v-model="pokemonSelectModel"
        label="Pokémons"
        :items="pokemons"
        item-title="name"
        return-object
      ></v-select>
    </v-col>
    <v-col cols="3">
      <v-btn height="55px" block color="primary" @click="pushPokemon"
        >Adicionar Pokémon</v-btn
      >
    </v-col>
  </v-row>
</template>
```

Princípio do aberto/fechado (Open–closed principle)

THE DEVELOPER'S CONFERENCE

```
<template>
  <v-row>
    <v-col cols="9">
      <v-select
        v-model="pokemonSelectModel"
        label="Pokémons"
        :items="pokemons"
        item-title="name"
        return-object
      ></v-select>
    </v-col>
    <v-col cols="3">
      1 reference
      <slot name="right" :currentPokemon="pokemonSelectModel"></slot>
    </v-col>
  </v-row>
</template>
```

Princípio do aberto/fechado (Open–closed principle)

THE DEVELOPER'S CONFERENCE

```
<PokemonSelect :pokemons="selectPokedex.pokemons">
  <template #right="scope">
    <v-btn height="55px" block color="primary"
      @click="$event => pushPokemon(scope.currentPokemon)"
      Adicionar Pokémon
    </v-btn>
  </template>
</PokemonSelect>
```

Princípio da Inversão de dependência (Dependency Inversion principle)

THE DEVELOPER'S CONFERENCE

Dependa de abstrações e não de implementações.

Princípio da Inversão de dependência (Dependency Inversion principle)

THE DEVELOPER'S CONFERENCE

```
const pokemonsGatewayHttp = new PokemonGatewayHttp();

onMounted(async () => {
  const pokemons = await pokemonsGatewayHttp.getPokemons();
```

```
async getPokemons() {
  const { data } = await axios.get("https://pokeapi.co/api/v2/pokemon");
  return data.results;
}
```

Princípio da Inversão de dependência (Dependency Inversion principle)

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```typescript
export default interface PokemonGateway {
    getPokemons(): Promise<PokemonCompact[]>;
    getPokemonByUrl(pokemonUrl: string): Promise<Pokemon>;
}
```

```typescript
const pokemonsGateway = inject("pokemonGateway") as PokemonGateway

onMounted(async () => {
  const pokemons = await pokemonsGateway.getPokemons();
```

Princípio da Inversão de dependência (Dependency Inversion principle)

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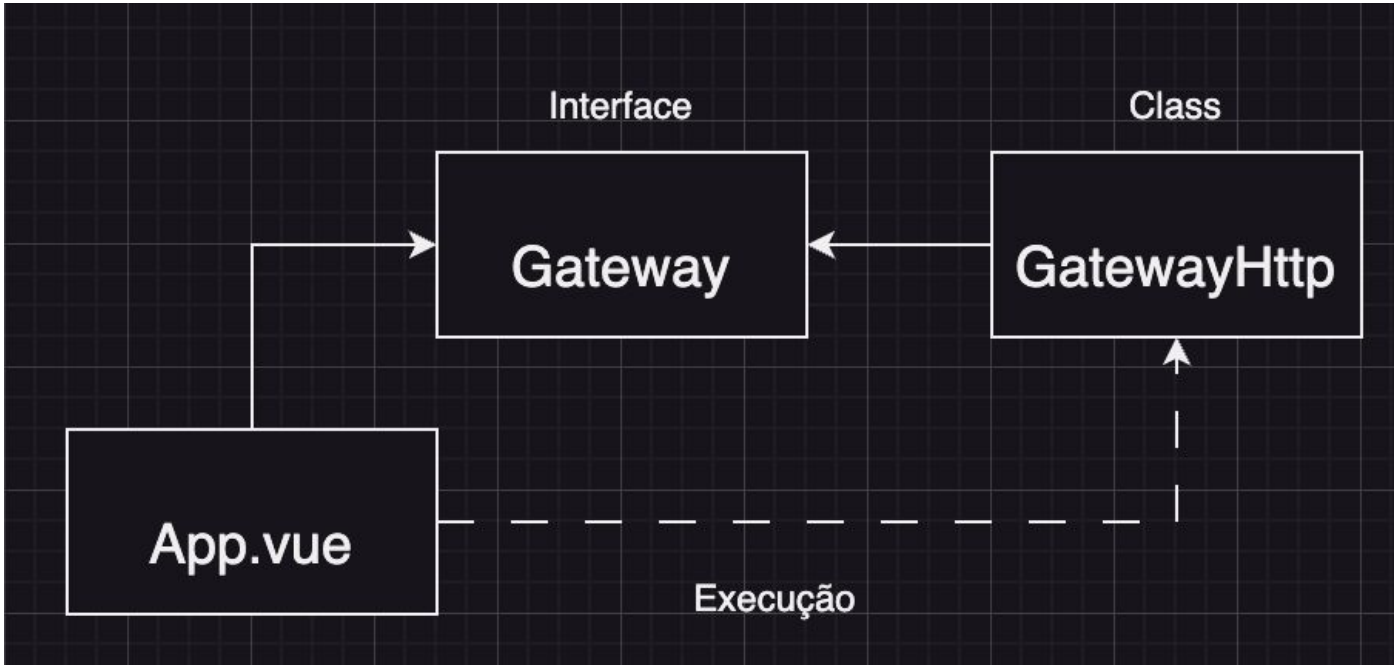
```
app.provide("pokemonGateway", new PokemonGatewayHttp());
```



Conclusão

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- Clean Code e Clean Architecture são dicas não regras
- Dá para aplicar as dicas do Uncle Bob no Frontend
- Pensar na qualidade do código não é perda de tempo

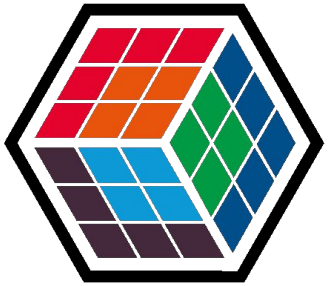
Obrigado! Dúvidas?

nolderosw

nolderos (Wesley Azevedo)

@wesley150

@leloazevedo



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