

# Copa Filmes

Resumo dos Passos práticos relacionados ao projeto Copa Filmes, baseado no referencial teórico listado nas referências bibliográficas.

## Passo 1

### Download do Visual Studio 2019 Community

The screenshot shows the Visual Studio download page on the Microsoft website. The page features the headline "Tudo o que você precisa para criar ótimos aplicativos. Gratuito." (Everything you need to create great apps. Free.). Below the headline, there are three main sections: "Visual Studio Community", "Visual Studio Code", and "Visual Studio Community para Mac". Each section includes a screenshot of the respective IDE and a brief description of its capabilities. The "Visual Studio Community" section describes it as a complete IDE for coding, debugging, testing, and deployment. The "Visual Studio Code" section highlights its cross-platform editing and debugging capabilities. The "Visual Studio Community para Mac" section mentions its use for developing iOS, Android, and .NET applications. A "Comentários" (Comments) button is visible on the right side of the page.

Software Gratuito para Desenvol x +

visualstudio.microsoft.com/pt-br/free-developer-offers/

Microsoft | Visual Studio Produtos Downloads Comprar Suporte Acesso do assinante Visual Studio gratuito Toda a Microsoft

## Tudo o que você precisa para criar ótimos aplicativos. Gratuito.

### Visual Studio Community

IDE completo para codificar, depurar, testar e implantar em qualquer plataforma

### Visual Studio Code

Edição e depuração em qualquer SO  
Ao usar o Visual Studio Code, você concorda com sua [licença e declaração de privacidade](#)

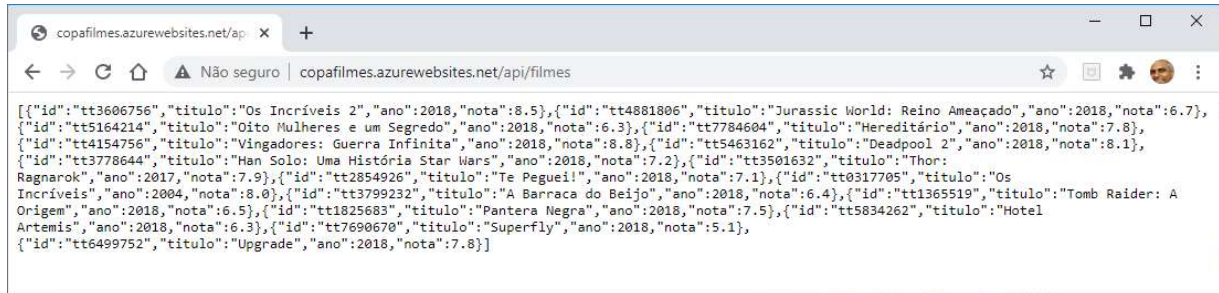
### Visual Studio Community para Mac

Desenvolva aplicativos e jogos para os sistemas iOS e Android e para a Web usando o .NET  
[Leia mais sobre como ativar sua licença](#)

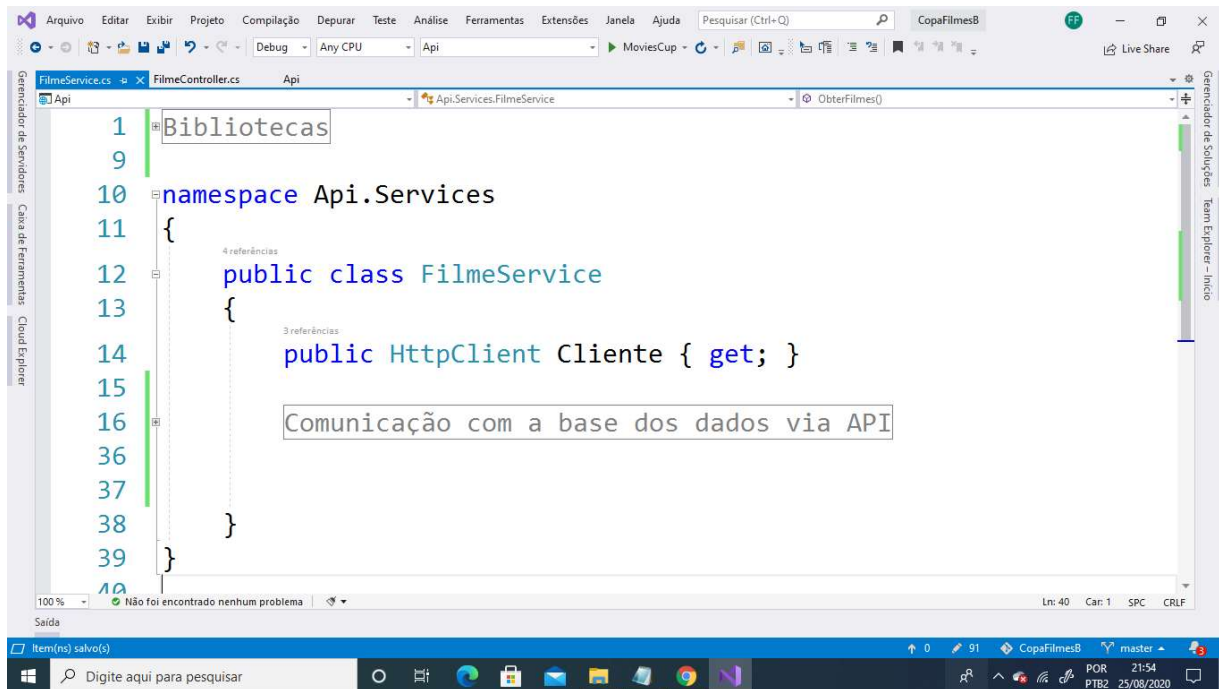
Comentários

## Passo 2

### API de filmes.

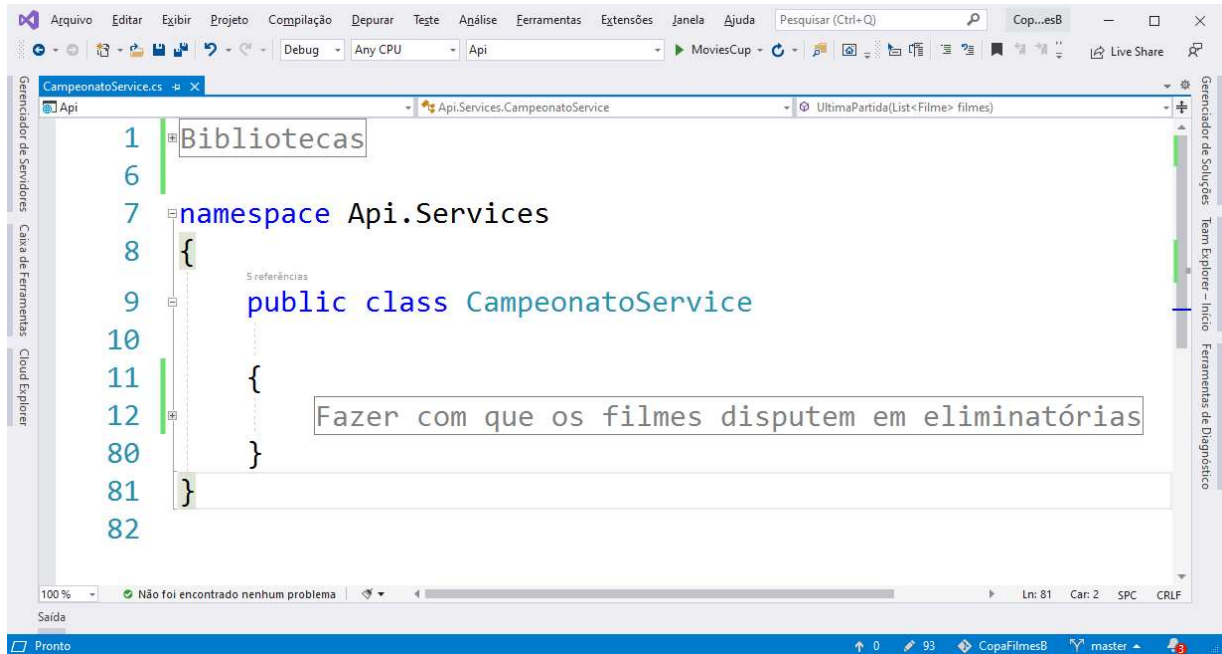


### Classe para consumir a API de filmes.



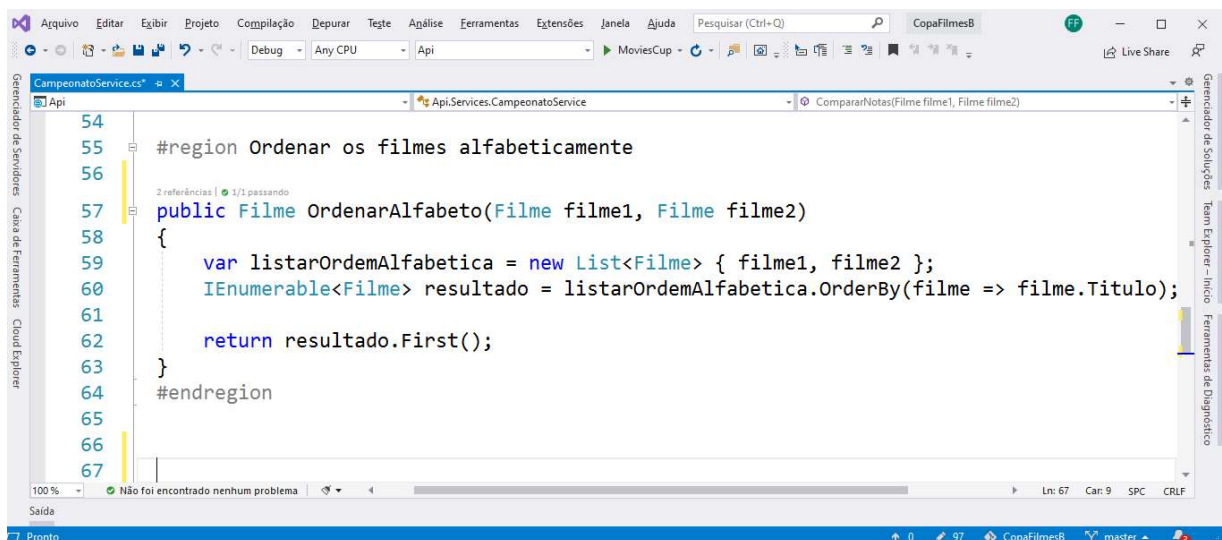
### Passo 3

Definir o critério de disputa.



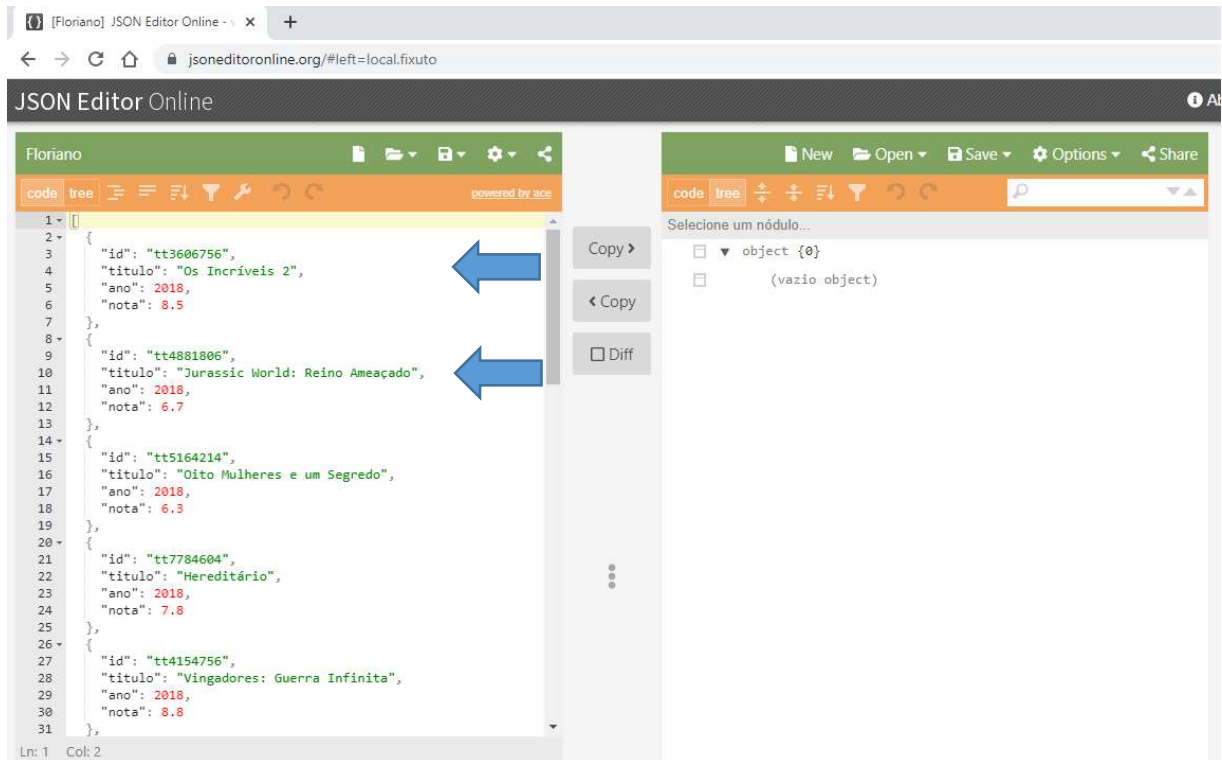
### Passo 4

Método para ordenar os filmes.



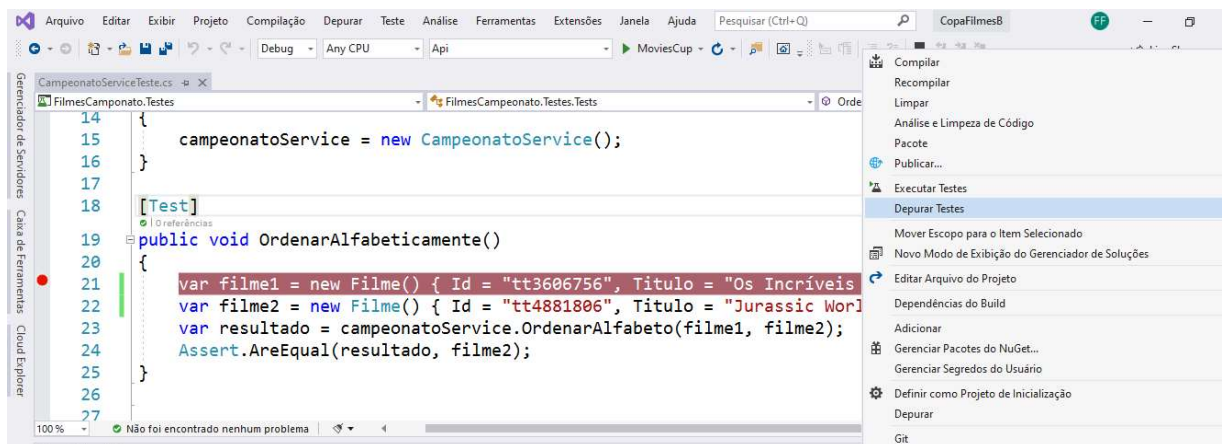
## Passo 5

Usar o editor JSON Online para observar os dados a serem testados.



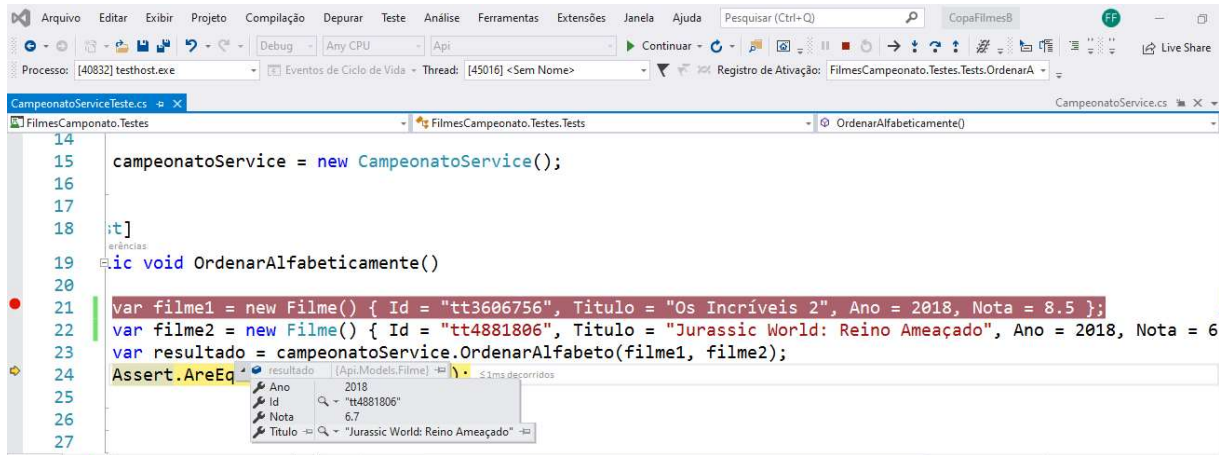
## Passo 6

Selecionar o projeto "FilmesCampeonato.Testes" e selecionar "Depurar Testes" para testar o método que ordena os filmes alfabeticamente.



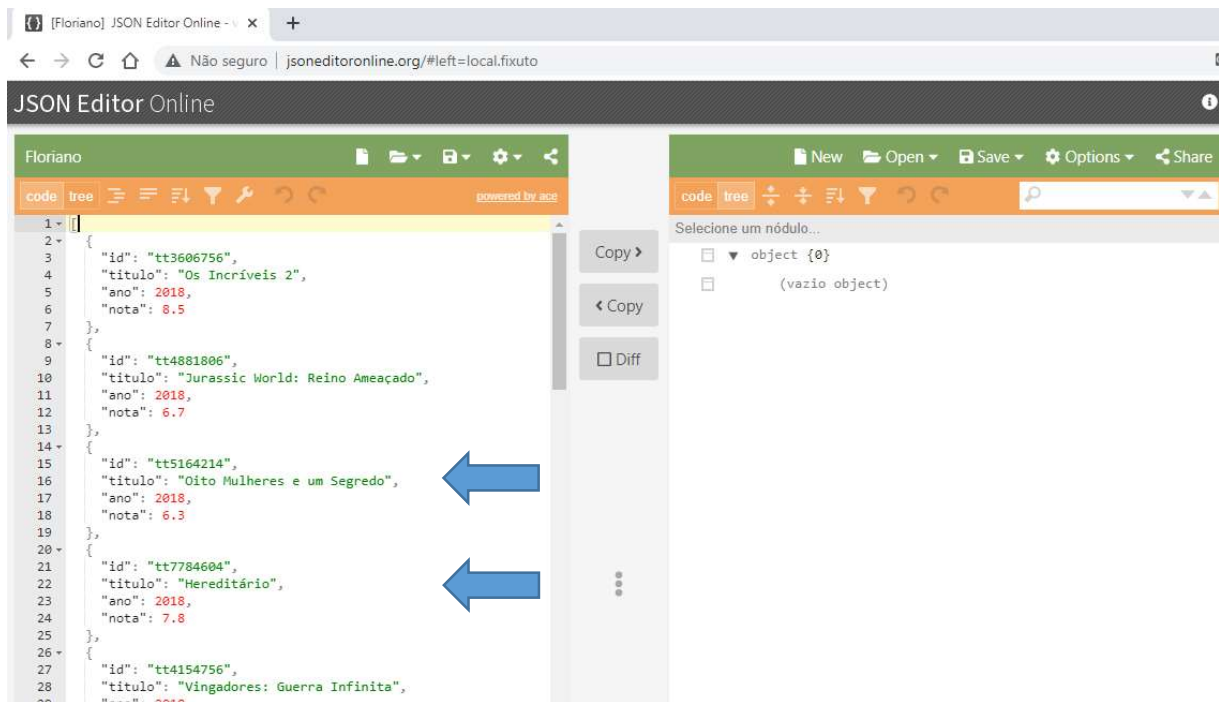
## Passo 7

Com a tecla F11 verificar se a variável resultado ordenou corretamente o filme.



## Passo 8

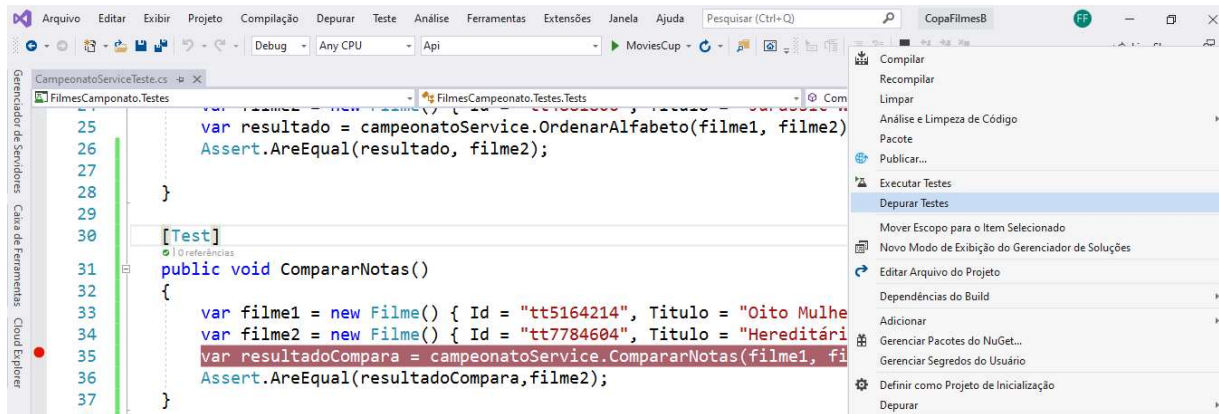
Usar o editor JSON Online para observar as notas a serem testadas.





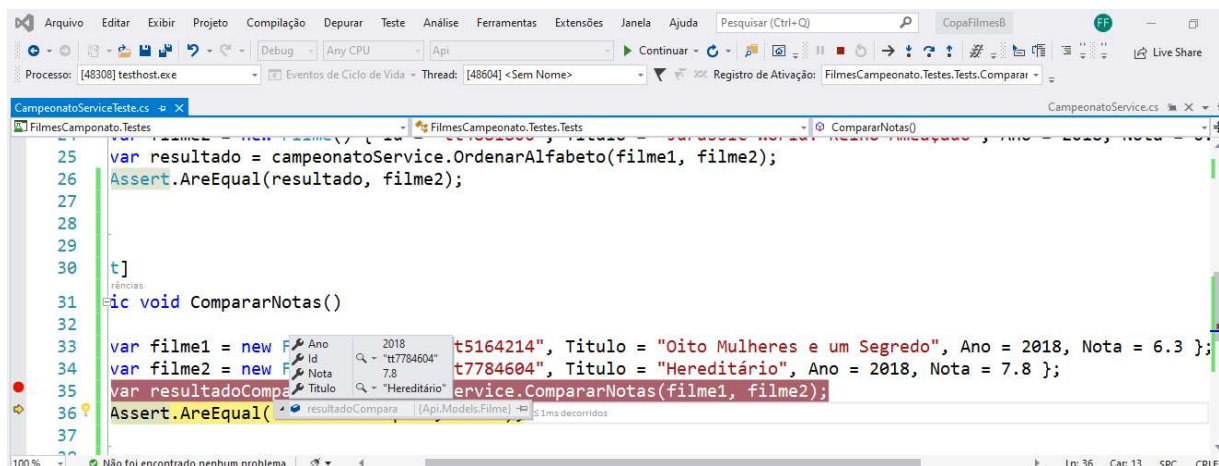
## Passo 9

Selecionar o projeto “FilmesCampeonato.Testes” e selecionar “Depurar Testes” para testar o método que compara notas.



## Passo 10

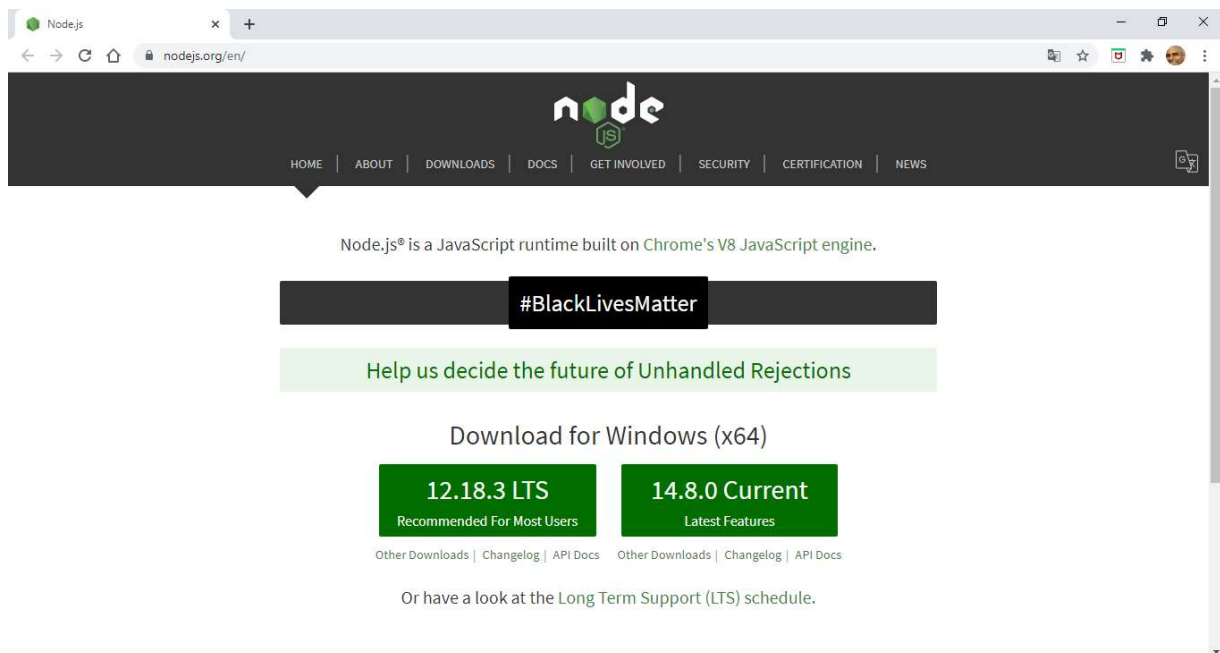
Com a tecla F11 verificar se a variável resultadoCompara armazenou corretamente a nota maior.



## Preparação dos Testes

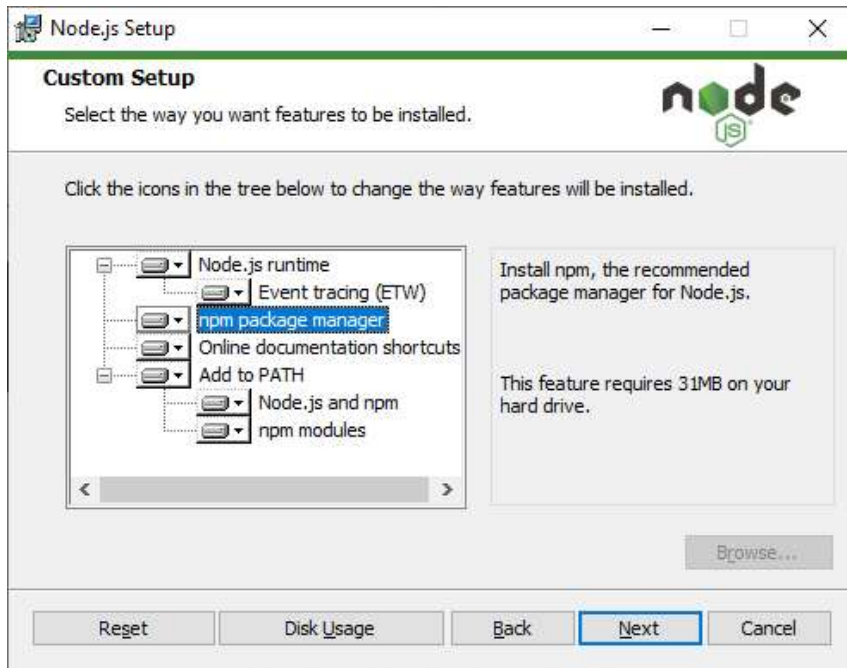
### Passo 1

#### Instalar o Node.js.



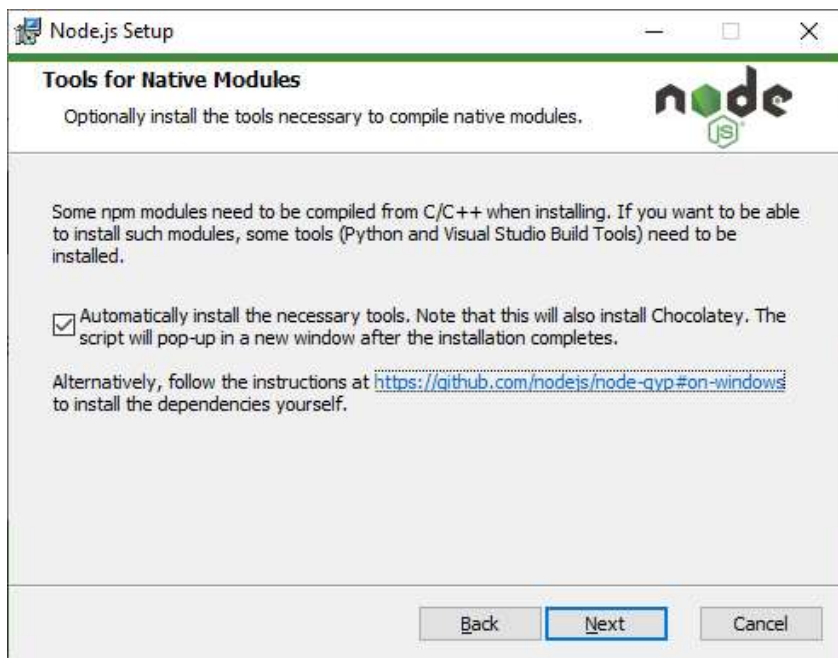
## Passo 2

Verificar se o gerenciador de pacotes NPM do Node.js será instalado.



## Passo 3

Selecione a opção para instalar as ferramentas necessárias para compilação de módulos nativos.



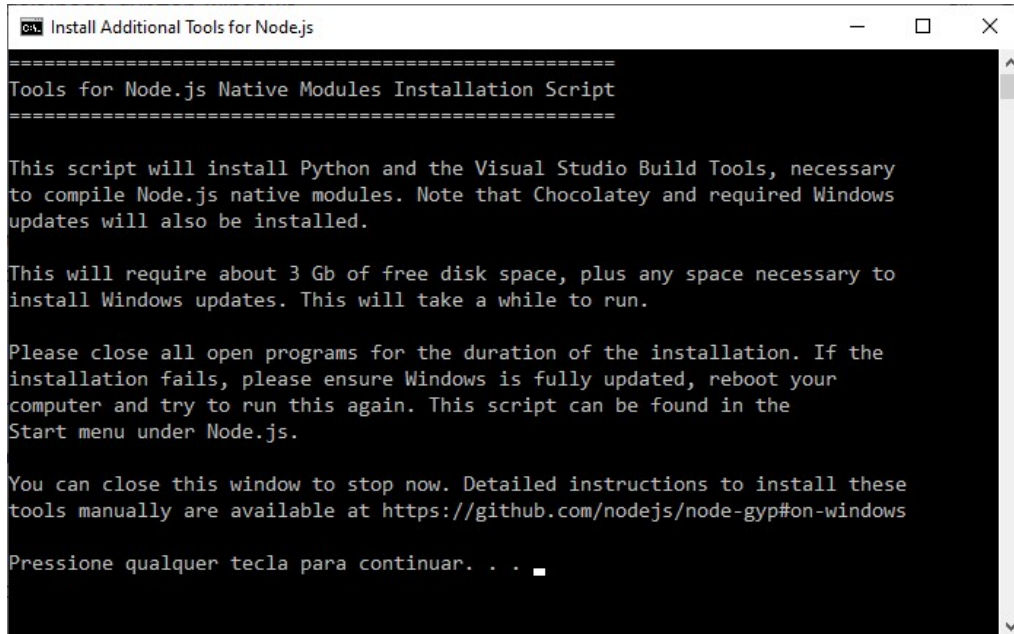
Florianio Ferreira dos Reis Filho

25/08/2020 página: 7



#### Passo 4

Caso apareça a janela de instalação das ferramentas para o Node.js, faça a instalação.



```
Install Additional Tools for Node.js

Tools for Node.js Native Modules Installation Script

This script will install Python and the Visual Studio Build Tools, necessary
to compile Node.js native modules. Note that Chocolatey and required Windows
updates will also be installed.

This will require about 3 Gb of free disk space, plus any space necessary to
install Windows updates. This will take a while to run.

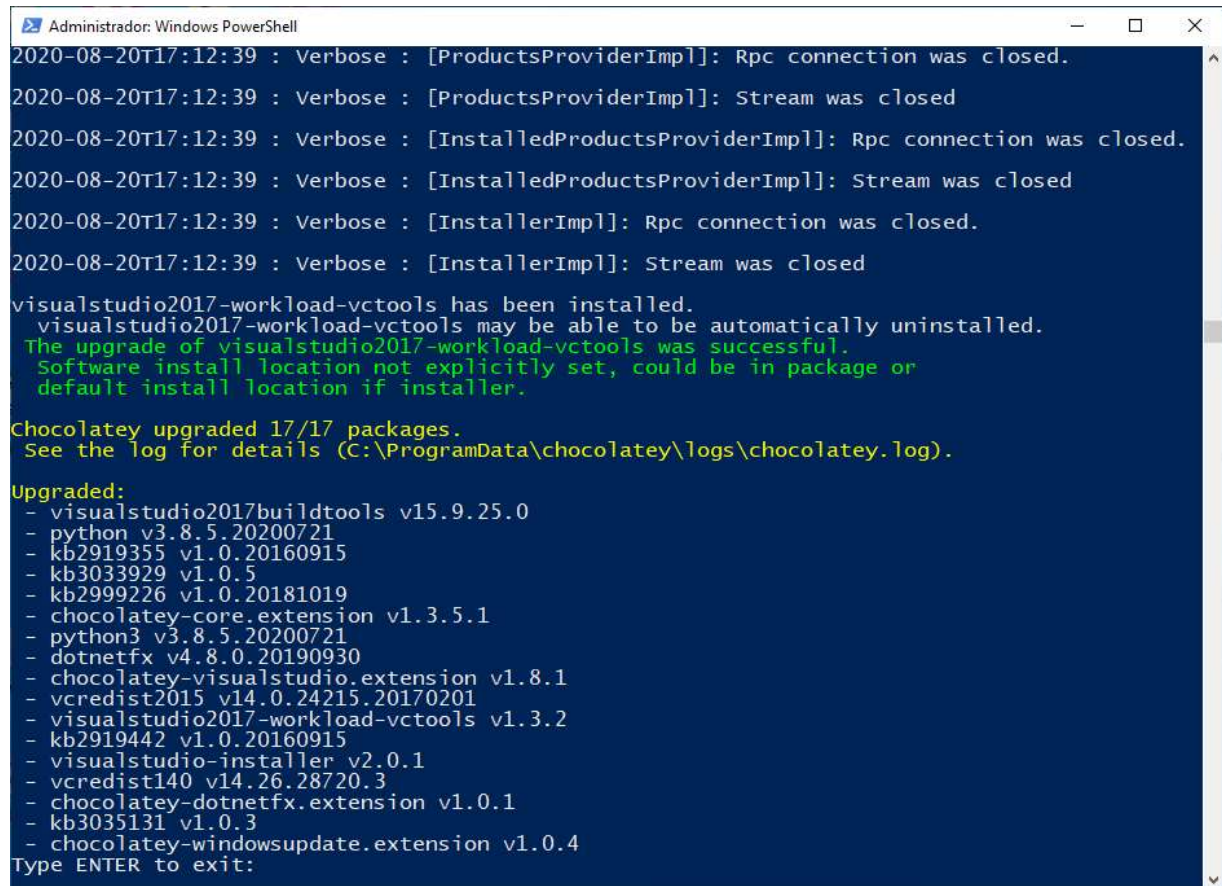
Please close all open programs for the duration of the installation. If the
installation fails, please ensure Windows is fully updated, reboot your
computer and try to run this again. This script can be found in the
Start menu under Node.js.

You can close this window to stop now. Detailed instructions to install these
tools manually are available at https://github.com/nodejs/node-gyp#on-windows

Pressione qualquer tecla para continuar. . . █
```

## Passo 5

Resultado da instalação das ferramentas para o Node.js.



```
Administrador: Windows PowerShell
2020-08-20T17:12:39 : Verbose : [ProductsProviderImpl]: Rpc connection was closed.
2020-08-20T17:12:39 : Verbose : [ProductsProviderImpl]: Stream was closed
2020-08-20T17:12:39 : Verbose : [InstalledProductsProviderImpl]: Rpc connection was closed.
2020-08-20T17:12:39 : Verbose : [InstalledProductsProviderImpl]: Stream was closed
2020-08-20T17:12:39 : Verbose : [InstallerImpl]: Rpc connection was closed.
2020-08-20T17:12:39 : Verbose : [InstallerImpl]: Stream was closed

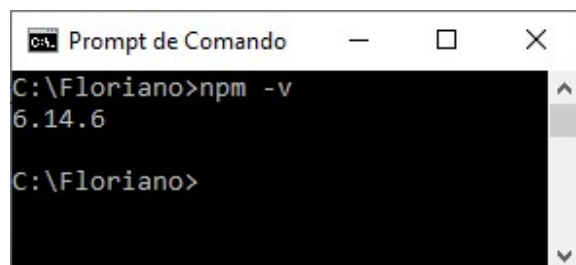
visualstudio2017-workload-vctools has been installed.
visualstudio2017-workload-vctools may be able to be automatically uninstalled.
The upgrade of visualstudio2017-workload-vctools was successful.
Software install location not explicitly set, could be in package or
default install location if installer.

Chocolatey upgraded 17/17 packages.
See the log for details (C:\ProgramData\chocolatey\logs\chocolatey.log).

Upgraded:
- visualstudio2017buildtools v15.9.25.0
- python v3.8.5.20200721
- kb2919355 v1.0.20160915
- kb3033929 v1.0.5
- kb2999226 v1.0.20181019
- chocolatey-core.extension v1.3.5.1
- python3 v3.8.5.20200721
- dotnetfx v4.8.0.20190930
- chocolatey-visualstudio.extension v1.8.1
- vcredist2015 v14.0.24215.20170201
- visualstudio2017-workload-vctools v1.3.2
- kb2919442 v1.0.20160915
- visualstudio-installer v2.0.1
- vcredist140 v14.26.28720.3
- chocolatey-dotnetfx.extension v1.0.1
- kb3035131 v1.0.3
- chocolatey-windowsupdate.extension v1.0.4
Type ENTER to exit:
```

## Passo 6

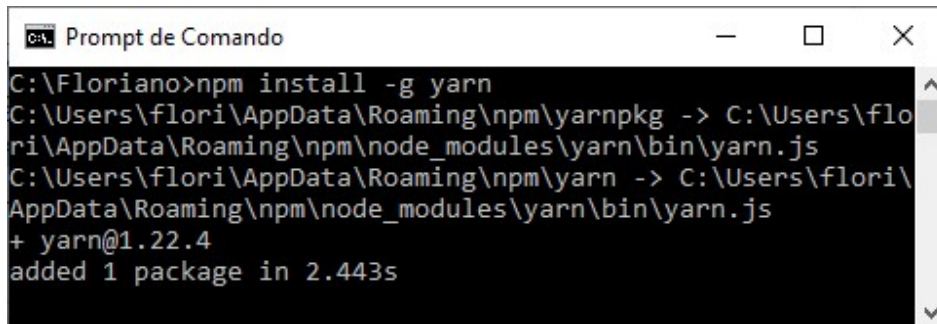
Verificar a versão do NPM



```
Prompt de Comando
C:\Floriano>npm -v
6.14.6
C:\Floriano>
```

## Passo 7

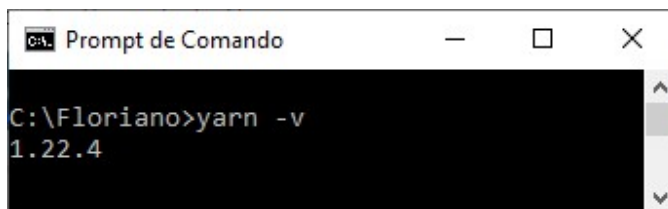
### Instalar o Yarn



```
C:\Floriano>npm install -g yarn
C:\Users\flori\AppData\Roaming\npm\yarnpkg -> C:\Users\flori\AppData\Roaming\npm\node_modules\yarn\bin\yarn.js
C:\Users\flori\AppData\Roaming\npm\yarn -> C:\Users\flori\AppData\Roaming\npm\node_modules\yarn\bin\yarn.js
+ yarn@1.22.4
added 1 package in 2.443s
```

## Passo 8

### Verificar a versão instalada.



```
C:\Floriano>yarn -v
1.22.4
```

## Passo 9

Navegar até o diretório do frontend onde está o projeto e verificar se existe o arquivo package.json

```
C:\Users\flori\source\repos\CopaFilmesA\frontend>dir
O volume na unidade C não tem nome.
O Número de Série do Volume é D6AB-8663

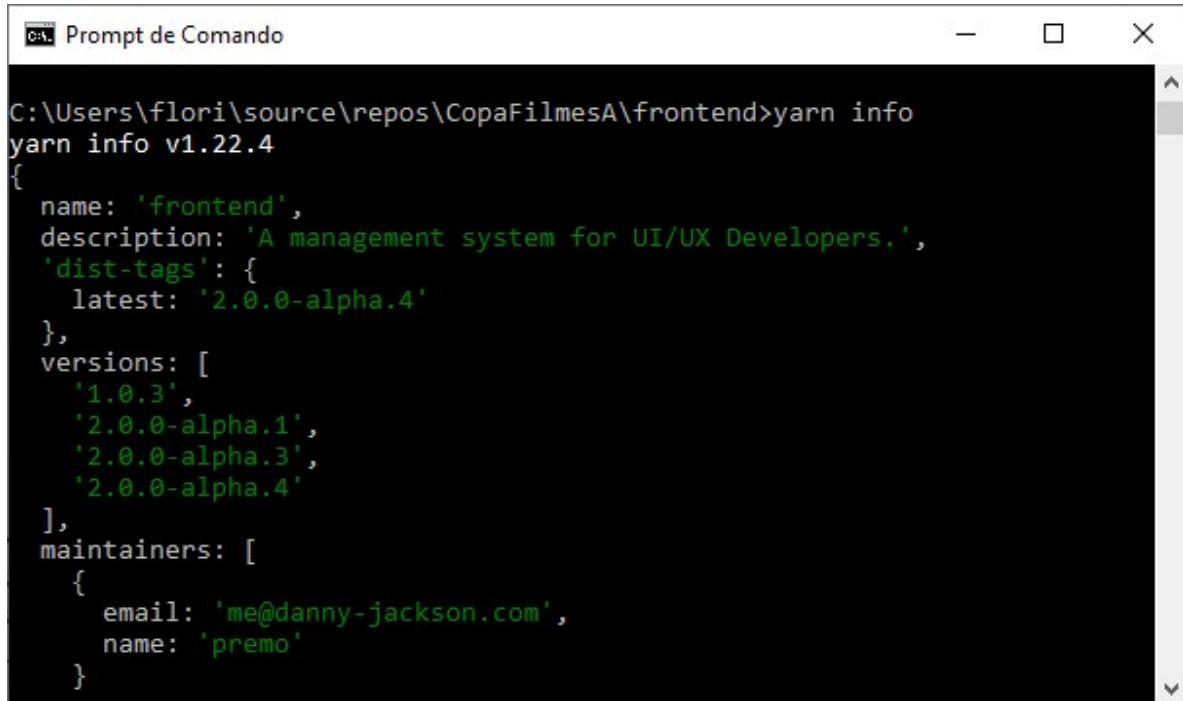
Pasta de C:\Users\flori\source\repos\CopaFilmesA\frontend

20/08/2020  01:48    <DIR>          .
20/08/2020  01:48    <DIR>          ..
20/08/2020  01:48             118 .gitignore
20/08/2020  01:48    <DIR>          build
20/08/2020  01:48       714.614 package-lock.json
20/08/2020  01:48         943 package.json
20/08/2020  01:48    <DIR>          public
20/08/2020  01:48         2.952 README.md
20/08/2020  01:48    <DIR>          src
20/08/2020  01:48       502.715 yarn.lock
                5 arquivo(s)        1.221.342 bytes
                5 pasta(s)       36.710.744.064 bytes disponíveis

C:\Users\flori\source\repos\CopaFilmesA\frontend>
```

## Passo 10

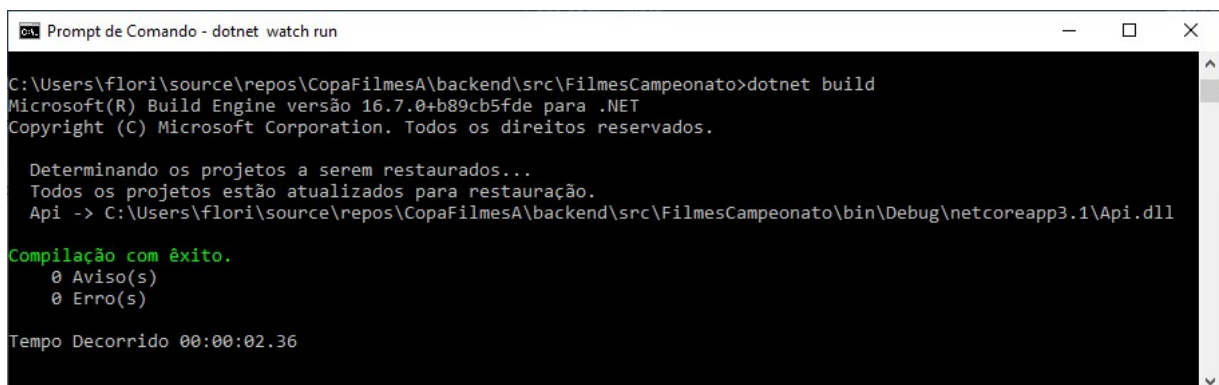
Veja mais informações sobre o Yarn e o arquivo package.json com o comando **yarn info**



```
C:\Users\flori\source\repos\CopaFilmesA\frontend>yarn info
yarn info v1.22.4
{
  name: 'frontend',
  description: 'A management system for UI/UX Developers.',
  'dist-tags': {
    latest: '2.0.0-alpha.4'
  },
  versions: [
    '1.0.3',
    '2.0.0-alpha.1',
    '2.0.0-alpha.3',
    '2.0.0-alpha.4'
  ],
  maintainers: [
    {
      email: 'me@danny-jackson.com',
      name: 'premo'
    }
  ]
}
```

## Passo 11

Navegar até o diretório do backend em ...\\src\\FilmesCampeonato e compilar a aplicação com o comando **dotnet build**



```
C:\Users\flori\source\repos\CopaFilmesA\backend\src\FilmesCampeonato>dotnet build
Microsoft(R) Build Engine versão 16.7.0+b89cb5fde para .NET
Copyright (C) Microsoft Corporation. Todos os direitos reservados.

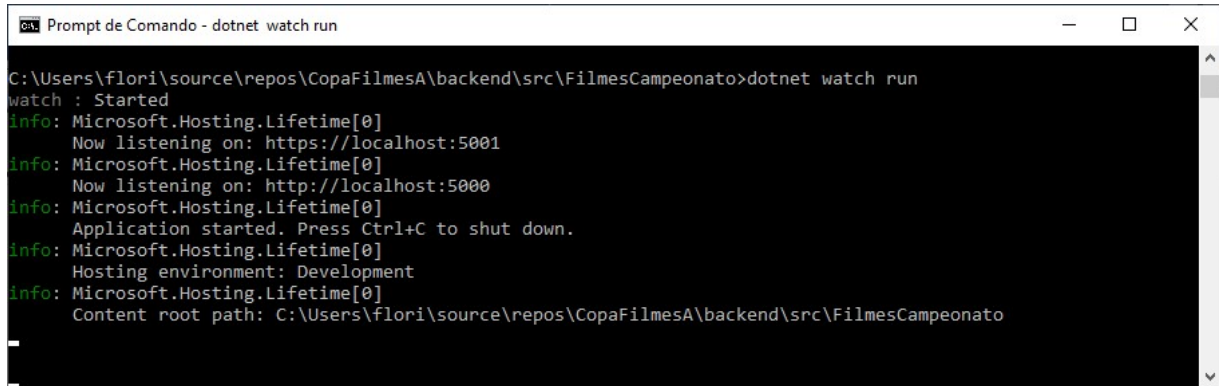
Determinando os projetos a serem restaurados...
Todos os projetos estão atualizados para restauração.
Api -> C:\Users\flori\source\repos\CopaFilmesA\backend\src\FilmesCampeonato\bin\Debug\netcoreapp3.1\Api.dll

Compilação com êxito.
  0 Aviso(s)
  0 Erro(s)

Tempo Decorrido 00:00:02.36
```

## Passo 12

Após compilar, iniciar a execução da aplicação com o comando **dotnet watch run**



```
C:\Users\flori\source\repos\CopaFilmesA\backend\src\FilmesCampeonato>dotnet watch run
watch : Started
info: Microsoft.Hosting.Lifetime[0]
      Now listening on: https://localhost:5001
info: Microsoft.Hosting.Lifetime[0]
      Now listening on: http://localhost:5000
info: Microsoft.Hosting.Lifetime[0]
      Application started. Press Ctrl+C to shut down.
info: Microsoft.Hosting.Lifetime[0]
      Hosting environment: Development
info: Microsoft.Hosting.Lifetime[0]
      Content root path: C:\Users\flori\source\repos\CopaFilmesA\backend\src\FilmesCampeonato
```



### Passo 13

Navegar até o diretório do frontend e instalar o npm com o comando **npm install**

```
C:\WINDOWS\system32\cmd.exe
C:\Users\flori\source\repos\CopaFilmesA\frontend>npm install

> core-js@2.6.11 postinstall C:\Users\flori\source\repos\CopaFilmesA\frontend\node_modules\babel-runtime\node_modules\core-js
> node -e "try{require('./postinstall')}catch(e){}"

Thank you for using core-js ( https://github.com/zloirock/core-js ) for polyfilling JavaScript standard library!

The project needs your help! Please consider supporting of core-js on Open Collective or Patreon:
> https://opencollective.com/core-js
> https://www.patreon.com/zloirock

Also, the author of core-js ( https://github.com/zloirock ) is looking for a good job -)

> core-js@3.6.5 postinstall C:\Users\flori\source\repos\CopaFilmesA\frontend\node_modules\core-js
> node -e "try{require('./postinstall')}catch(e){}"

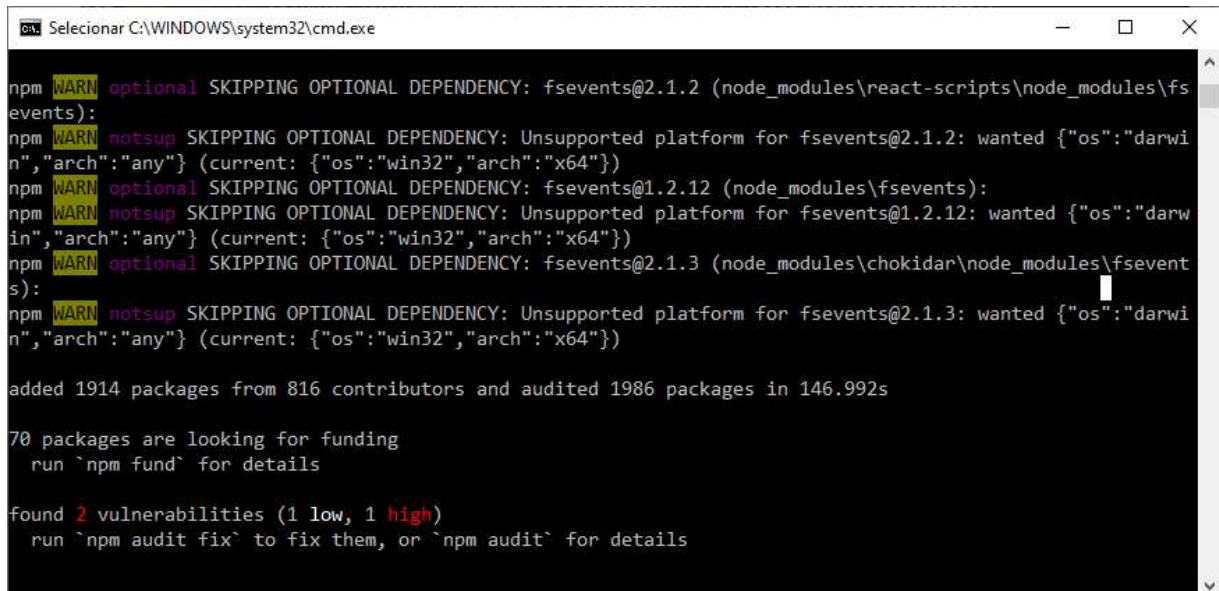
> core-js-pure@3.6.5 postinstall C:\Users\flori\source\repos\CopaFilmesA\frontend\node_modules\core-js-pure
> node -e "try{require('./postinstall')}catch(e){}"

npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@2.1.2 (node_modules\react-scripts\node_modules\fs
events):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@2.1.2: wanted {"os":"darwin","arch":"any"} (current: {"os":"win32","arch":"x64"})
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@1.2.12 (node_modules\fsevents):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@1.2.12: wanted {"os":"darwin","arch":"any"} (current: {"os":"win32","arch":"x64"})
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@2.1.3 (node_modules\chokidar\node_modules\fsevents):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@2.1.3: wanted {"os":"darwin","arch":"any"} (current: {"os":"win32","arch":"x64"})

added 1914 packages from 816 contributors and audited 1986 packages in 146.992s
```

## Passo 14

Verificar se foi encontrada alguma vulnerabilidade.



```
Selecionar C:\WINDOWS\system32\cmd.exe

npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@2.1.2 (node_modules\react-scripts\node_modules\fs
events):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@2.1.2: wanted {"os":"darwi
n","arch":"any"} (current: {"os":"win32","arch":"x64"})
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@1.2.12 (node_modules\fsevents):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@1.2.12: wanted {"os":"darw
in","arch":"any"} (current: {"os":"win32","arch":"x64"})
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@2.1.3 (node_modules\chokidar\node_modules\fsevent
s):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@2.1.3: wanted {"os":"darwi
n","arch":"any"} (current: {"os":"win32","arch":"x64"})

added 1914 packages from 816 contributors and audited 1986 packages in 146.992s

70 packages are looking for funding
  run `npm fund` for details

found 2 vulnerabilities (1 low, 1 high)
  run `npm audit fix` to fix them, or `npm audit` for details
```

## Passo 15

Caso tenha encontrado alguma vulnerabilidade, utilizar o comando **npm audit**

```
Selecione C:\WINDOWS\system32\cmd.exe
C:\Users\flori\source\repos\CopaFilmesA\frontend>npm audit

=== npm audit security report ===

# Run npm install react-scripts@3.4.3 to resolve 2 vulnerabilities

Low          Prototype Pollution
Package       yargs-parser
Dependency of react-scripts
Path          react-scripts > webpack-dev-server > yargs > yargs-parser
More info     https://npmjs.com/advisories/1500

High          Remote Code Execution
Package       serialize-javascript
Dependency of react-scripts
Path          react-scripts > terser-webpack-plugin > serialize-javascript
More info     https://npmjs.com/advisories/1548

found 2 vulnerabilities (1 low, 1 high) in 1986 scanned packages
run `npm audit fix` to fix 2 of them.
```

## Passo 16

Utilizar o comando **npm install react-scripts@3.4.3** para corrigir as vulnerabilidades.

```
Selecione C:\WINDOWS\system32\cmd.exe
C:\Users\flori\source\repos\CopaFilmesA\frontend>npm install react-scripts@3.4.3
npm WARN deprecated fsevents@1.2.13: fsevents 1 will break on node v14+ and could be using insecure binaries. Upgrade to fsevents 2.
npm WARN deprecated left-pad@1.3.0: use String.prototype.padStart()
npm WARN deprecated request@2.88.2: request has been deprecated, see https://github.com/request/request/issues/3142
npm WARN deprecated request-promise-native@1.0.9: request-promise-native has been deprecated because it extends the now deprecated request package, see https://github.com/request/request/issues/3142
npm WARN deprecated har-validator@5.1.5: this library is no longer supported
npm WARN deprecated chokidar@2.1.8: Chokidar 2 will break on node v14+. Upgrade to chokidar 3 with 15x less dependencies.
npm WARN deprecated @hapi/joi@15.1.1: joi is leaving the @hapi organization and moving back to 'joi' (https://github.com/sideway/joi/issues/2411)
npm WARN deprecated @hapi/topo@3.1.6: This version has been deprecated and is no longer supported or maintained
npm WARN deprecated @hapi/bourne@1.3.2: This version has been deprecated and is no longer supported or maintained
npm WARN deprecated @hapi/address@2.1.4: This version has been deprecated and is no longer supported or maintained
npm WARN deprecated @hapi/hoek@8.5.1: This version has been deprecated and is no longer supported or maintained
npm WARN deprecated core-js@2.6.11: core-js@<3 is no longer maintained and not recommended for usage due to the number of issues. Please, upgrade your dependencies to the actual version of core-js@3.
[.....] | extract:estraverse: sill tarball trying @typescript-eslint/typescript-estree@2.34.0 by hash: sha512-OMAr+nJWKd1VM9L0qCqh3pQQPwxHAN7Du8DR6[.....]
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@2.1.2 (node_modules\react-scripts\node_modules\fs-events):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@2.1.2: wanted {"os":"darwin","arch":"any"} (current: {"os":"win32","arch":"x64"})
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@1.2.7 (node_modules\jest-haste-map\node_modules\fs-events):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@1.2.7: wanted {"os":"darwin","arch":"any"} (current: {"os":"win32","arch":"x64"})
npm WARN notsup Unsupported engine for watchpack-chokidar2@2.0.0: wanted: {"node":"<8.10.0"} (current: {"n
```

```
Selecionar C:\WINDOWS\system32\cmd.exe
npm WARN notsup Unsupported engine for watchpack-chokidar2@2.0.0: wanted: {"node": "<8.10.0"} (current: {"n
ode": "12.18.3", "npm": "6.14.6"})
npm WARN notsup Not compatible with your version of node/npm: watchpack-chokidar2@2.0.0
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@^1.2.7 (node_modules\watchpack-chokidar2\node_mod
ules\chokidar\node_modules\fsevents):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@1.2.13: wanted {"os": "darw
in", "arch": "any"} (current: {"os": "win32", "arch": "x64"})
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@^1.2.7 (node_modules\webpack-dev-server\node_modu
les\chokidar\node_modules\fsevents):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@1.2.13: wanted {"os": "darw
in", "arch": "any"} (current: {"os": "win32", "arch": "x64"})
npm WARN tsutils@3.17.1 requires a peer of typescript@>=2.8.0 || >= 3.2.0-dev || >= 3.3.0-dev || >= 3.4.0-
dev || >= 3.5.0-dev || >= 3.6.0-dev || >= 3.6.0-beta || >= 3.7.0-dev || >= 3.7.0-beta but none is installe
d. You must install peer dependencies yourself.

+ react-scripts@3.4.3
added 74 packages from 14 contributors, removed 242 packages, updated 127 packages, moved 19 packages and
audited 1750 packages in 193.41s

27 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities

C:\Users\flori\source\repos\CopaFilmesA\frontend>
```

## Passo 17

Utilizar o comando **npm start** para executar a página web

```
npm
C:\Users\flori\source\repos\CopaFilmesA\frontend>npm start

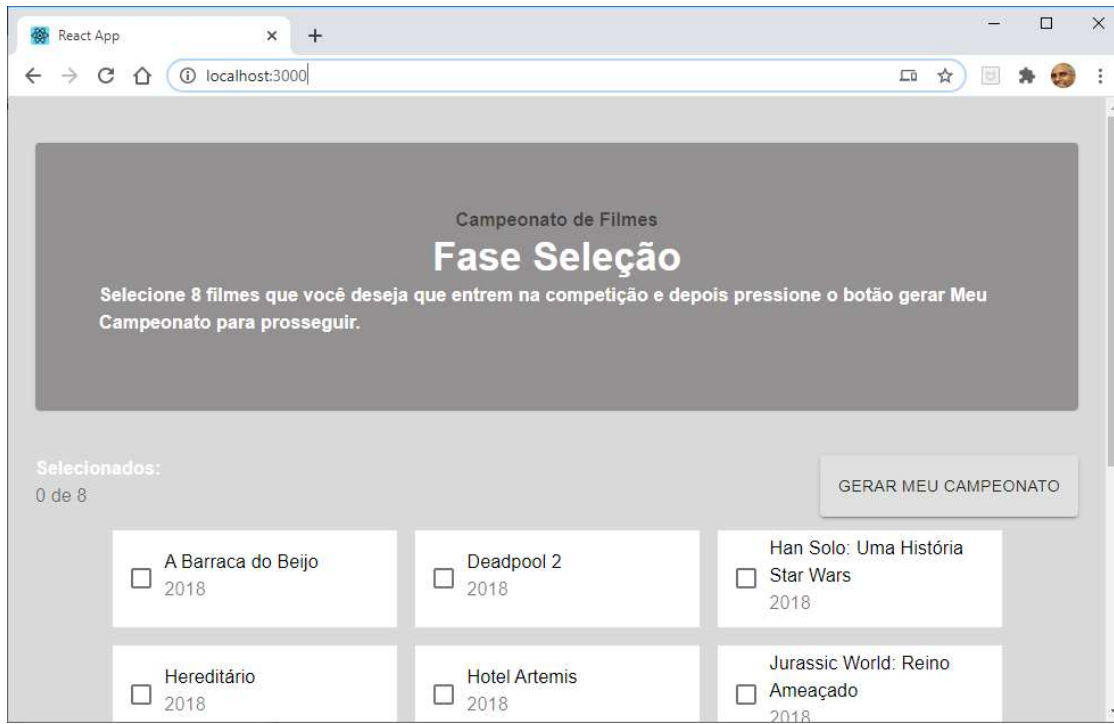
> frontend@0.1.0 start C:\Users\flori\source\repos\CopaFilmesA\frontend
> react-scripts start

i @wds@: Project is running at http://192.168.1.5/
i @wds@: webpack output is served from
i @wds@: Content not from webpack is served from C:\Users\flori\source\repos\CopaFilmesA\frontend\public
i @wds@: 404s will fallback to /
Starting the development server...
```



## Passo 18

A página web será carregada no navegador na porta 3000.



## Passo 19

Aparecerá a mensagem que a página web foi iniciada na porta 3000.

```
npm
C:\Users\flori\source\repos\CopaFilmesA\frontend>npm start

> frontend@0.1.0 start C:\Users\flori\source\repos\CopaFilmesA\frontend
> react-scripts start

[ @wds@: Project is running at http://192.168.1.5/
[ @wds@: webpack output is served from
[ @wds@: Content not from webpack is served from C:\Users\flori\source\repos\CopaFilmesA\frontend\public
[ @wds@: 404s will fallback to /
Starting the development server...
Compiled successfully!

You can now view frontend in the browser.

Local:      http://localhost:3000
On Your Network:  http://192.168.1.5:3000

Note that the development build is not optimized.
To create a production build, use yarn build.
```

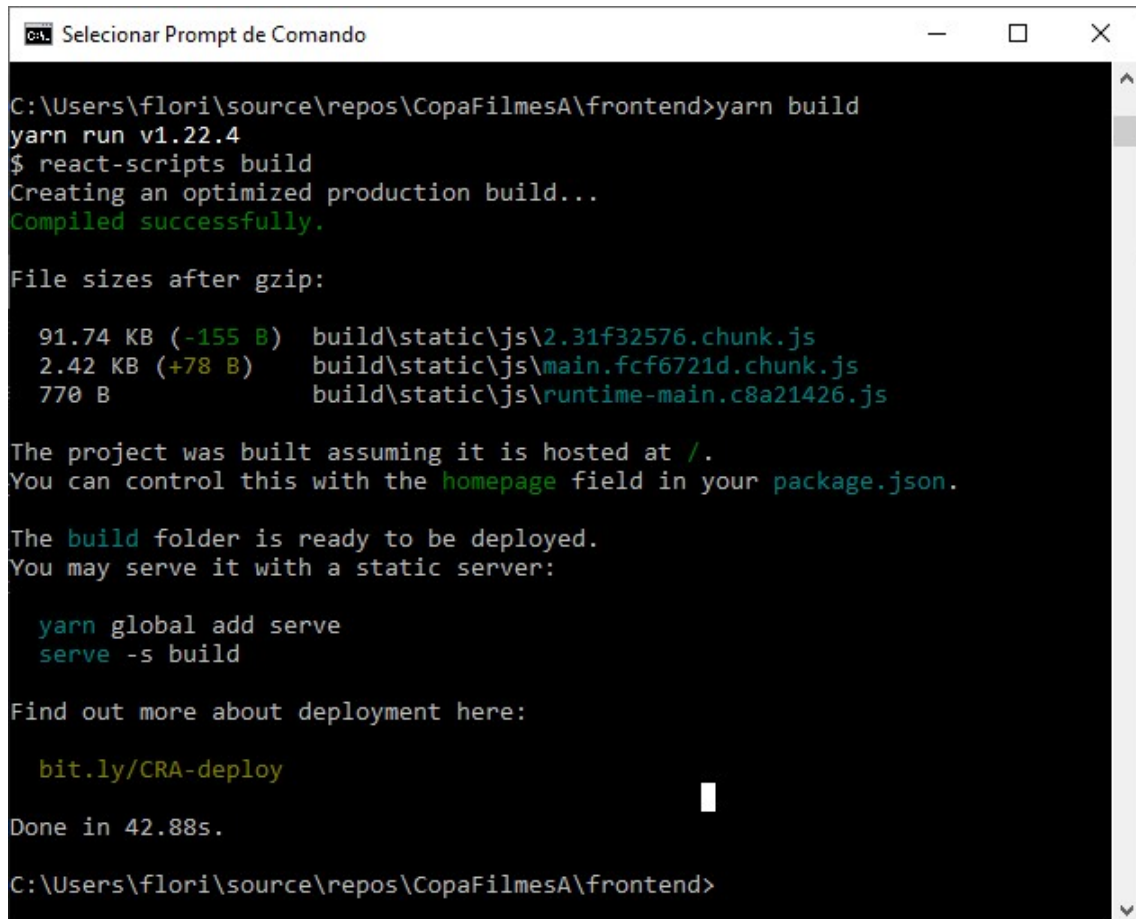
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## Passo 20

Abra outra janela e navegue até a pasta de frontend, digite **yarn build**



```
C:\Users\flori\source\repos\CopaFilmesA\frontend>yarn build
yarn run v1.22.4
$ react-scripts build
Creating an optimized production build...
Compiled successfully.

File sizes after gzip:

  91.74 KB (-155 B) build\static\js\2.31f32576.chunk.js
   2.42 KB (+78 B) build\static\js\main.fcf6721d.chunk.js
    770 B        build\static\js\runtime-main.c8a21426.js

The project was built assuming it is hosted at /.
You can control this with the homepage field in your package.json.

The build folder is ready to be deployed.
You may serve it with a static server:

  yarn global add serve
  serve -s build

Find out more about deployment here:

  bit.ly/CRA-deploy

Done in 42.88s.

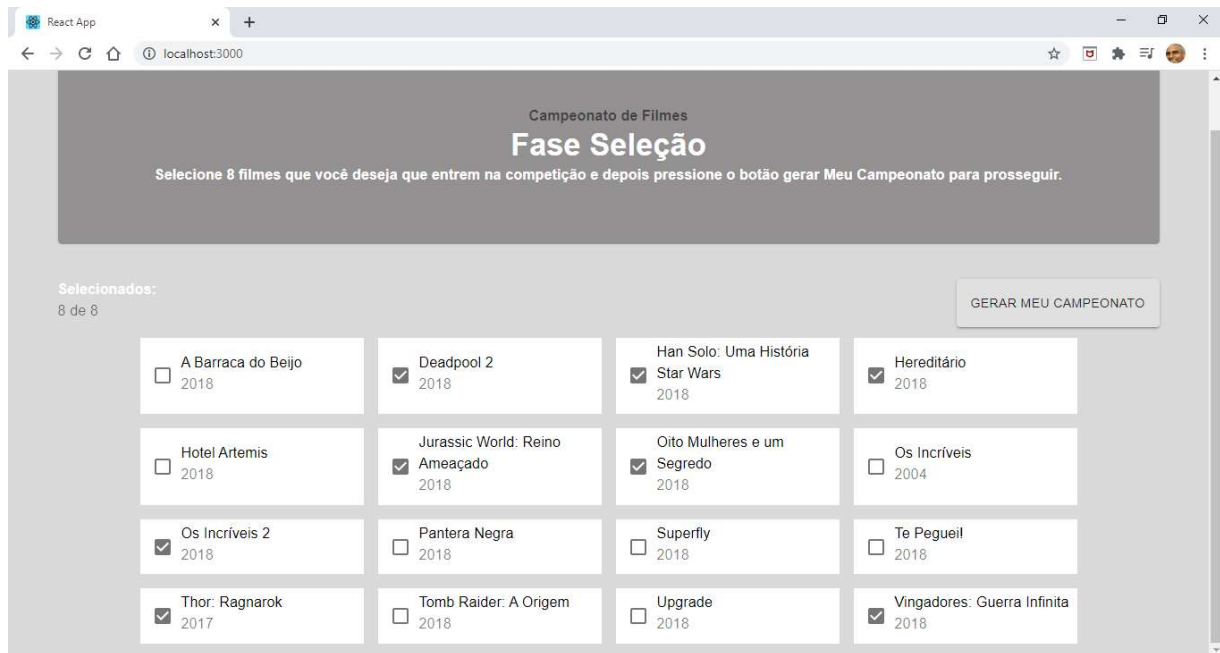
C:\Users\flori\source\repos\CopaFilmesA\frontend>
```

## Passo 21

Volte até a página e teste a aplicação, com base no caso de teste:

Caso selecione os 8 primeiros filmes da lista:

- "Os Incríveis 2"
- "Jurassic World: Reino Ameaçado"
- "Oito Mulheres e um Segredo"
- "Hereditário"
- "Vingadores: Guerra Infinita"
- "Deadpool 2"
- "Han Solo: Uma História Star Wars"
- "Thor: Ragnarok"



## Passo 22

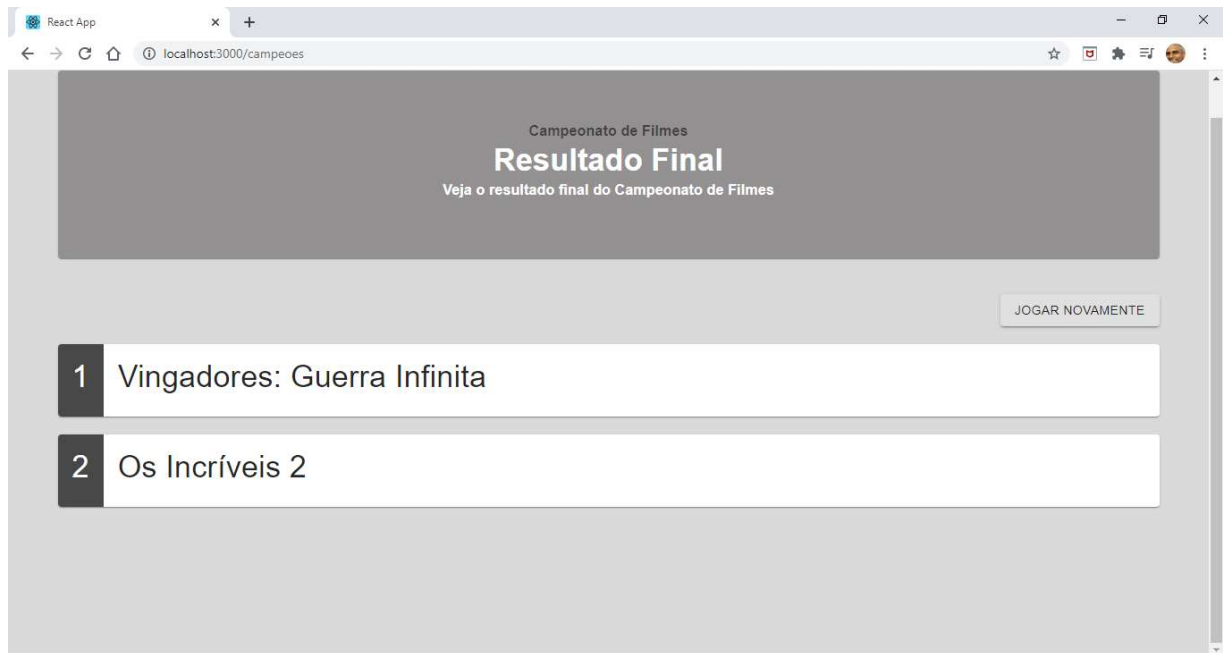
Selecione o botão GERAR MEU CAMPEONATO e veja o resultado do campeonato.

Com esses participantes, os vencedores serão:

- "Vingadores: Guerra Infinita"
- "Os Incríveis 2"

O campeão, portanto, será o filme:

- "Vingadores: Guerra Infinita"



### Passo 23

Ainda na pasta de frontend, digite **yarn start**

A aplicação irá executar em outra porta, informe **Y**

```
C:\> Prompt de Comando - yarn start

yarn run v1.22.4
source\repos\CopaFilmesA\frontend>yarn start
$ react-scripts start
? Something is already running on port 3000.

Would you like to run the app on another port instead? Yes
  [E]wds: Project is running at http://192.168.1.5/
  [E]wds: webpack output is served from
  [E]wds: Content not from webpack is served from C:\Users\flori\source\repos\CopaFilmesA\frontend\public
  [E]wds: 404s will fallback to /
Starting the development server...
Compiled successfully!

You can now view frontend in the browser.

  Local:            http://localhost:3001
  On Your Network:  http://192.168.1.5:3001

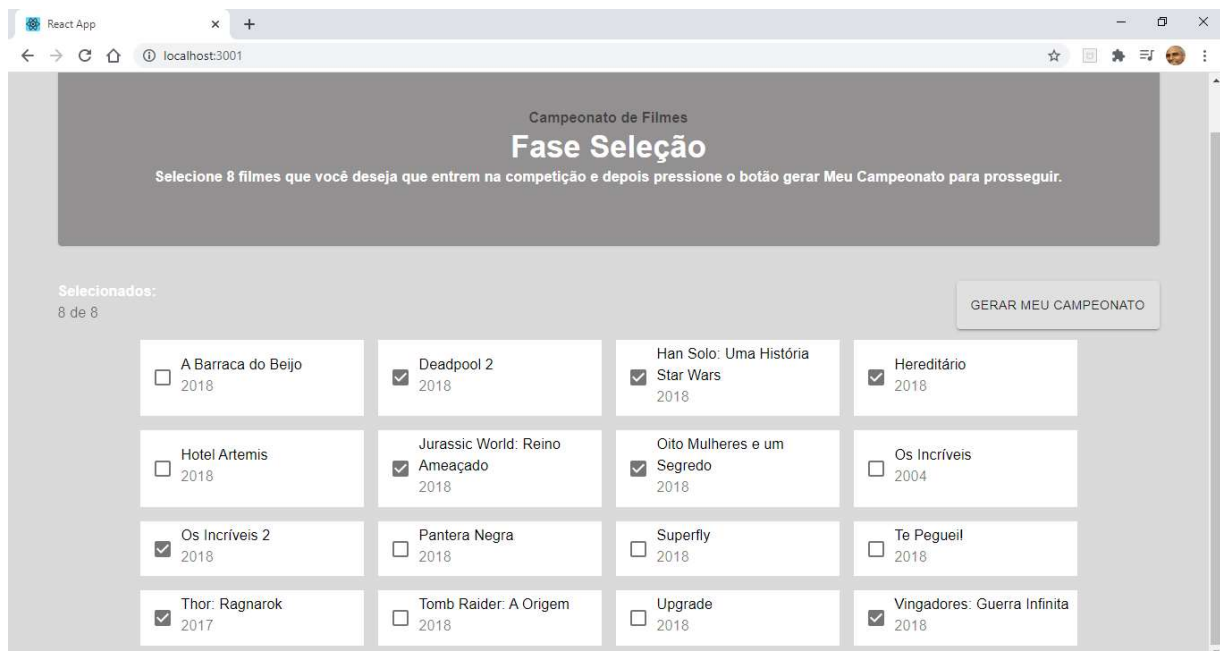
Note that the development build is not optimized.
To create a production build, use yarn build.
```

## Passo 24

A aplicação rodará agora na porta 3001. Teste a aplicação, com base no caso de teste:

Caso selecione os 8 primeiros filmes da lista:

- "Os Incríveis 2"
- "Jurassic World: Reino Ameaçado"
- "Oito Mulheres e um Segredo"
- "Hereditário"
- "Vingadores: Guerra Infinita"
- "Deadpool 2"
- "Han Solo: Uma História Star Wars"
- "Thor: Ragnarok"



## Passo 25

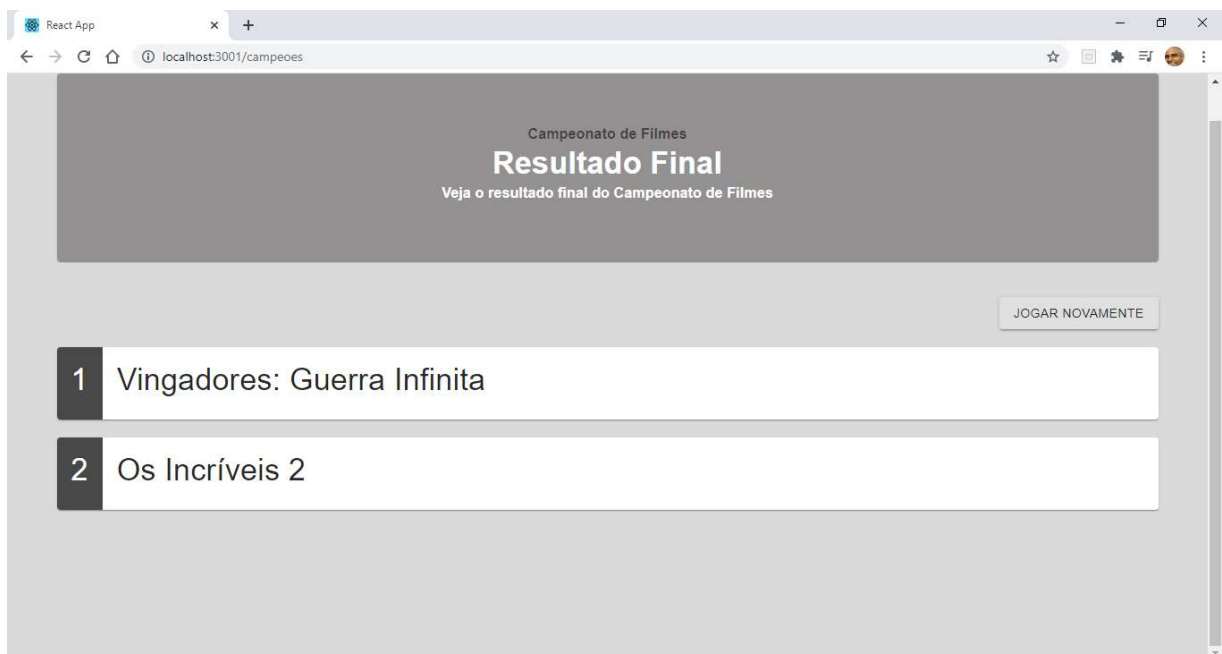
Selecione o botão GERAR MEU CAMPEONATO e veja o resultado do campeonato na porta 3001.

Com esses participantes, os vencedores serão:

- "Vingadores: Guerra Infinita"
- "Os Incríveis 2"

O campeão, portanto, será o filme:

- "Vingadores: Guerra Infinita"



## Conclusão

Esse protótipo inicial de projeto foi desenvolvido no Visual Studio Community 2019 [1].

Para testar:

1. Instalar o Visual Studio Community 2019
2. Instalar o Node.js
3. Instalar o Yarn

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O NPM (Node Package Manager) é um gerenciador de pacotes para Node.js [2][5]. O Node.js é um ambiente de servidor de código aberto que permite a execução do JavaScript no servidor [4].

O Node.js é um código aberto que utiliza o JavaScript como sintaxe para o desenvolvimento de aplicações.

Um pacote em Node.js contém todos os arquivos necessários para um módulo. Entende-se por módulo as bibliotecas JavaScript que podem ser incluídas no projeto de software.

Yarn é um gerenciador de pacotes, de código aberto, que permite usar e compartilhar código com outros desenvolvedores [6]. O código é disponibilizado por meio de um pacote, que contém todo o código a ser compartilhado.

## Referência básica

[1] Visual Studio Community 2019. Disponível em: <<https://visualstudio.microsoft.com/pt-br/free-developer-offers/>>. Acesso em: 20 out. 2020.

[2] Node.js NPM. Disponível em: <[https://www.w3schools.com/nodejs/nodejs\\_npm.asp](https://www.w3schools.com/nodejs/nodejs_npm.asp)>. Acesso em: 20 out. 2020.

[3] Node.js native addon build tool. Disponível em: <<https://github.com/nodejs/node-gyp#on-windows>>. Acesso em: 20 out. 2020.

[4] Node.js Tutorial. Disponível em: <<https://www.w3schools.com/nodejs/>>. Acesso em: 20 out. 2020.

[5] NPM Documentation. Disponível em: <<https://docs.npmjs.com/cli-documentation/>>. Acesso em: 20 out. 2020.

[6] Safe, stable, reproducible projects. Disponível em: <<https://yarnpkg.com/>>. Acesso em: 20 out. 2020.

[7] Oskojess. Disponível em: <<https://github.com/oskojess/CopaFilmes>>. Acesso em: 25 out. 2020.