

# 项目文档——天气预报

## 1.项目概述

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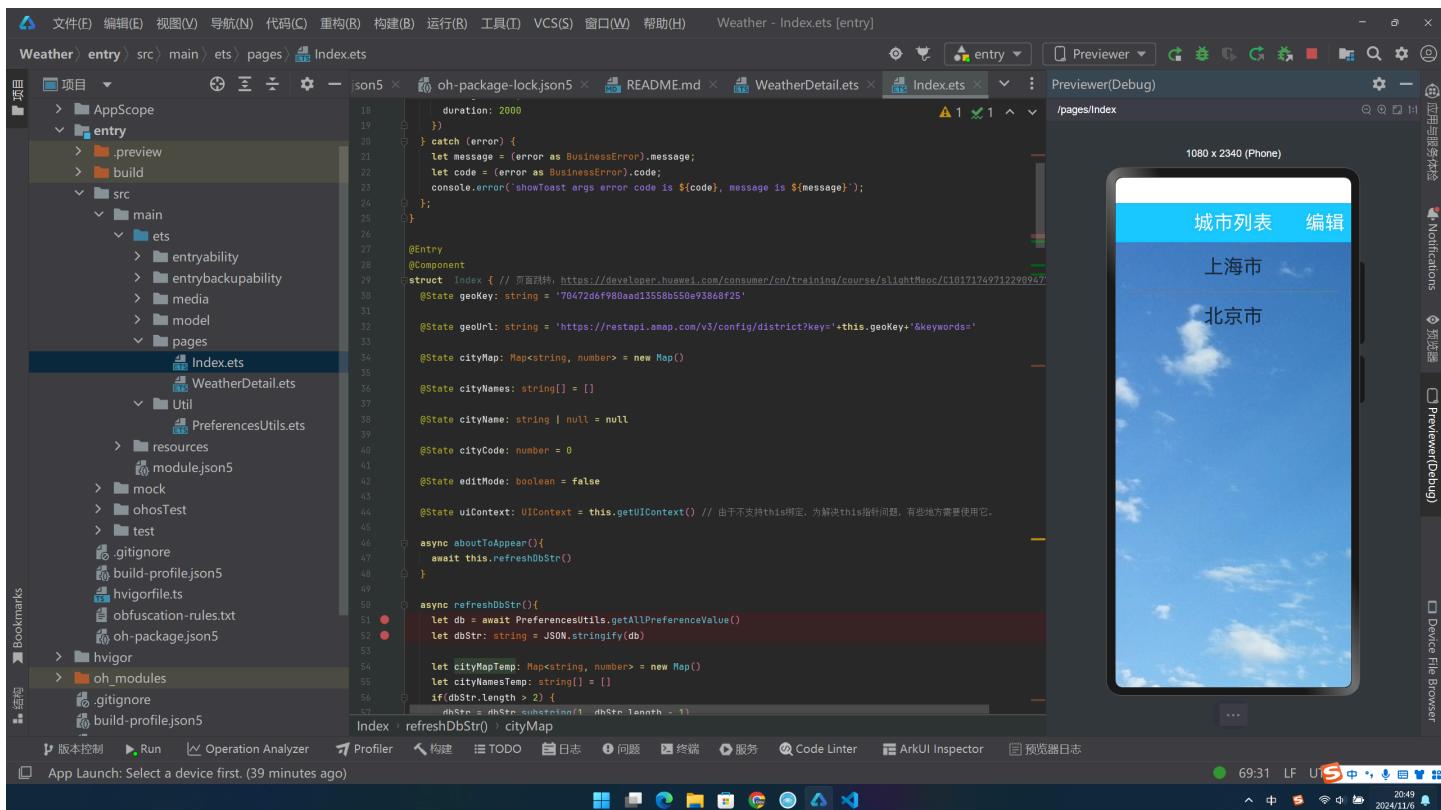
本次作业我实现了一个简单的天气预报项目，实现了查询某一地区的天气情况、收藏与管理城市列表等功能。项目支持在手机、电脑等设备上运行。

## 2.项目结构

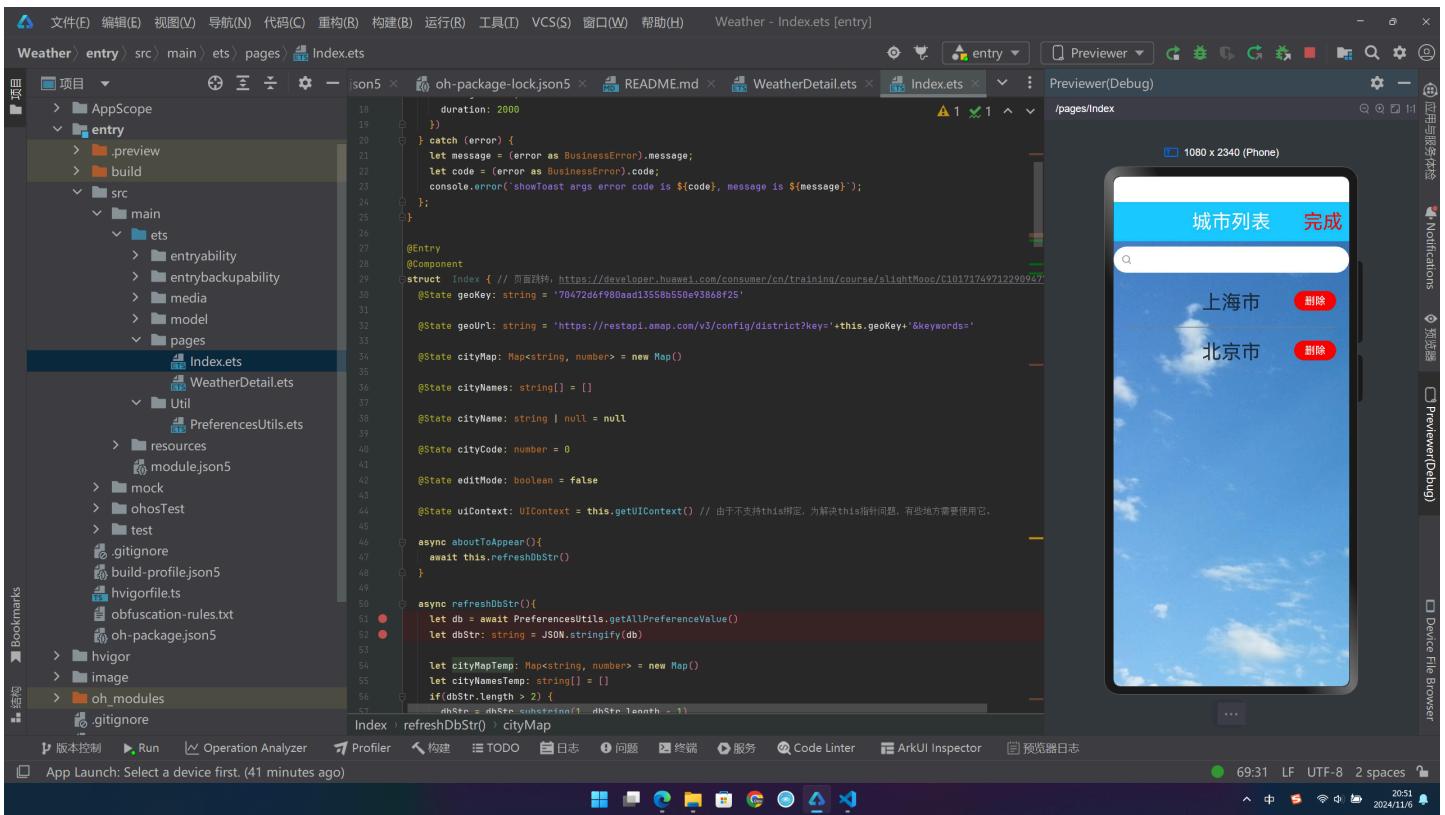
首先由DevEco Studio生成项目基本框架。ets/media目录主要存放使用的图标、图片等资源。ets/pages下存放页面，其中Index.ets为主页面，主要包括收藏的城市列表；WeatherDetail.ets为天气详情页，使用了Tab布局分页展示实时天气和预测天气。ets/Util存放使用的工具，包括使用Preferences进行数据的持久化。

## 3.项目展示

1.项目启动后，进入主页面。包括收藏的城市列表。

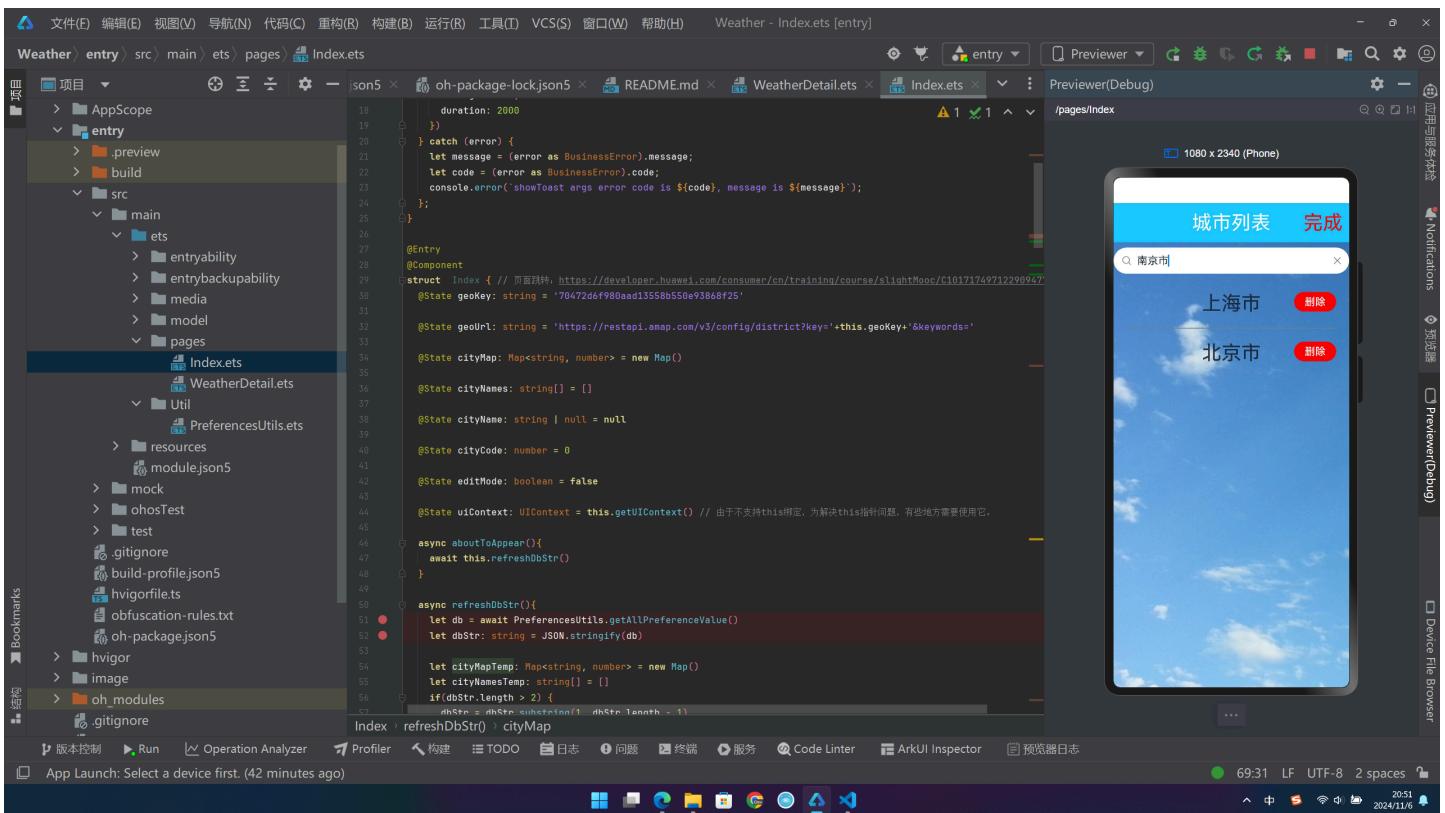


2.点击右上角“编辑”，可以对列表项进行管理。

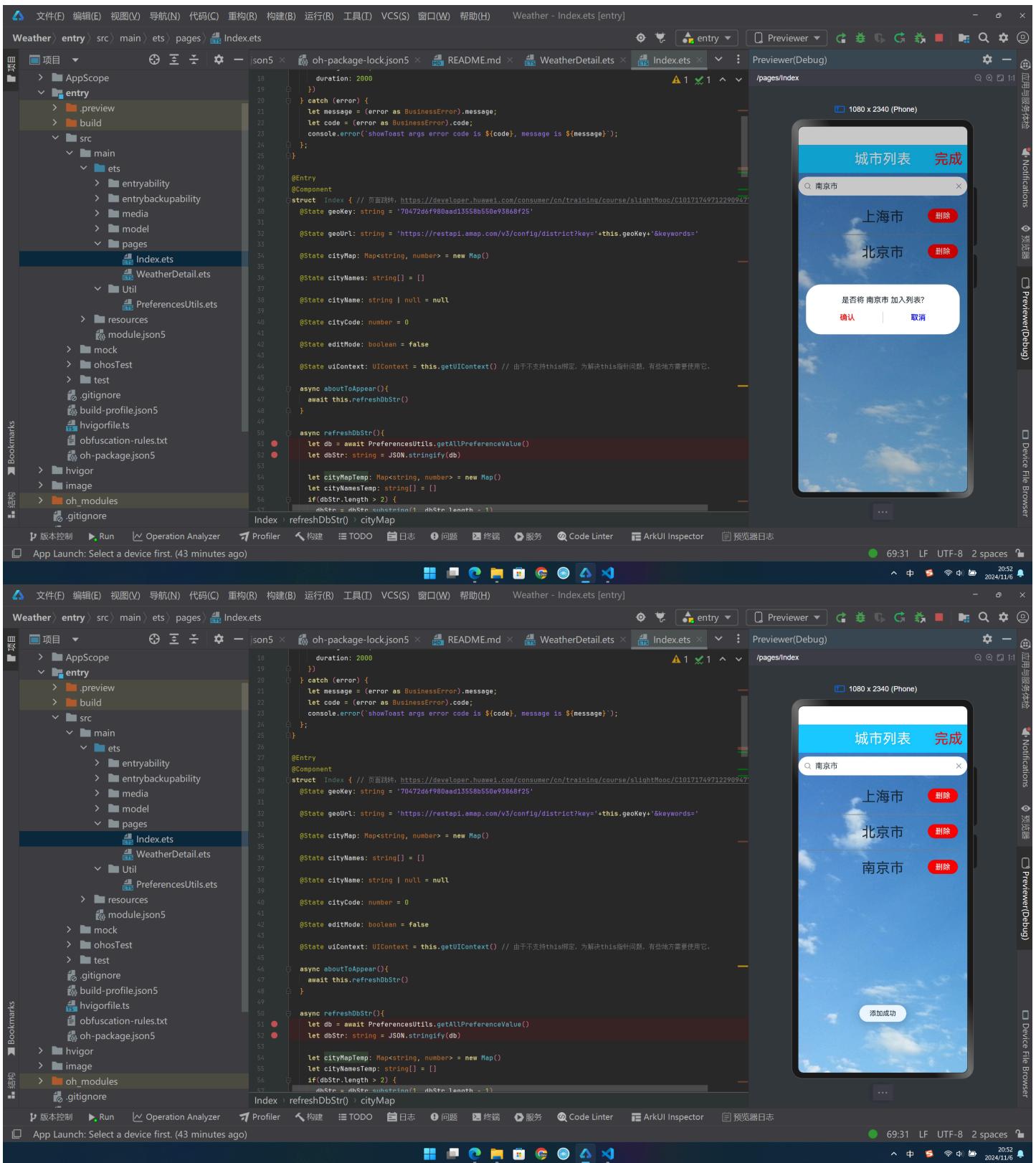


The screenshot shows the Huawei DevEco Studio IDE interface. The code editor displays ETS (Entry Transfer System) code for a file named Index.ets. The code handles user input, database refresh, and city list rendering. A preview window on the right shows a mobile application with a search bar and a list of cities (e.g., 上海市, 北京市). The status bar at the bottom indicates the device is a 1080x2340 (Phone).

3.在搜索框内输入城市，回车、确定，可以将城市添加进列表中。其中搜索功能是通过调用高德api并进行一定的数据筛选处理得到的。



The screenshot shows the Huawei DevEco Studio IDE interface. The code editor displays ETS (Entry Transfer System) code for a file named Index.ets. The code handles user input, database refresh, and city list rendering. A preview window on the right shows a mobile application with a search bar containing '南京市' and a list of cities (e.g., 上海市, 北京市). The status bar at the bottom indicates the device is a 1080x2340 (Phone).



The screenshot shows the Huawei DevEco Studio IDE interface. The left panel displays the project structure under the 'entry' folder, including files like AppScope, entry, build, src (main, ets, Util), resources, mock, ohosTest, test, .gitignore, build-profile.json5, h vigofile.ts, obfuscation-rules.txt, and oh-package.json5. The right panel shows the code editor for 'Index.ets' with syntax highlighting for ETS (Huawei's UI framework). The code handles city search and refresh logic. Below the code editor is the 'Previewer' tab, which displays a mobile application interface titled '城市列表' (City List) with a search bar and a confirmation dialog box asking '是否将南京市加入列表?' (Add Nanjing City to List?). The bottom status bar shows the time as 69:31 and the date as 2024/11/6.

```
18     duration: 2000
19   }
20 } catch (error) {
21   let message = (error as BusinessError).message;
22   let code = (error as BusinessError).code;
23   console.error(`showToast args error code is ${code}, message is ${message}`);
24 }
25
26 @Entry
27 @Component
28 struct Index { // 页面跳转: https://developer.huawei.com/consumer/cn/training/course/slightMock/C10171749712290947
29   @State geoKey: string = '70472d6f980aad13558b550e93868f25'
30
31   @State geoUrl: string = 'https://restapi.amap.com/v3/config/district?key=' + this.geoKey + '&keywords='
32
33   @State cityMap: Map<string, number> = new Map()
34
35   @State cityNames: string[] = []
36
37   @State cityName: string | null = null
38
39   @State cityCode: number = 0
40
41   @State editMode: boolean = false
42
43   @State uiContext: UIContext = this.getUIContext() // 由于不支持this绑定, 为解决this指针问题, 有些地方需要使用它。
44
45   async aboutToAppear(){
46     await this.refreshDbStr()
47   }
48
49   async refreshDbStr(){
50     let db = await PreferencesUtils.getAllPreferenceValue()
51     let dbStr: string = JSON.stringify(db)
52
53     let cityMapTemp: Map<string, number> = new Map()
54     let cityNamesTemp: string[] = []
55     if(dbStr.length > 2) {
56       dbStr = dbStr.substring(1, dbStr.length - 1)
57
58       dbStr = dbStr.substring(0, dbStr.length - 1)
59     }
60
61     let dbTemp: any = JSON.parse(dbStr)
62
63     for(let key in dbTemp) {
64       let value = dbTemp[key]
65       if(value.type === 'number') {
66         cityMapTemp.set(key, value.value)
67       } else if(value.type === 'string') {
68         cityNamesTemp.push(value.value)
69       }
70     }
71
72     this.cityMap = cityMapTemp
73     this.cityNames = cityNamesTemp
74
75     this.cityName = null
76     this.cityCode = 0
77
78     this.editMode = false
79
80     this.uiContext = this.getUIContext() // 由于不支持this绑定, 为解决this指针问题, 有些地方需要使用它。
81
82   }
83
84   async refreshDbStr(){
85     let db = await PreferencesUtils.getAllPreferenceValue()
86     let dbStr: string = JSON.stringify(db)
87
88     let cityMapTemp: Map<string, number> = new Map()
89     let cityNamesTemp: string[] = []
90     if(dbStr.length > 2) {
91       dbStr = dbStr.substring(1, dbStr.length - 1)
92
93       dbStr = dbStr.substring(0, dbStr.length - 1)
94     }
95
96     let dbTemp: any = JSON.parse(dbStr)
97
98     for(let key in dbTemp) {
99       let value = dbTemp[key]
100      if(value.type === 'number') {
101        cityMapTemp.set(key, value.value)
102      } else if(value.type === 'string') {
103        cityNamesTemp.push(value.value)
104      }
105    }
106
107    this.cityMap = cityMapTemp
108    this.cityNames = cityNamesTemp
109
110    this.cityName = null
111    this.cityCode = 0
112
113    this.editMode = false
114
115    this.uiContext = this.getUIContext() // 由于不支持this绑定, 为解决this指针问题, 有些地方需要使用它。
116
117  }
118
119  @Entry
120  @Component
121  struct WeatherDetail { // 页面跳转: https://developer.huawei.com/consumer/cn/training/course/slightMock/C10171749712290947
122    @State geoKey: string = '70472d6f980aad13558b550e93868f25'
123
124    @State geoUrl: string = 'https://restapi.amap.com/v3/config/district?key=' + this.geoKey + '&keywords='
125
126    @State cityMap: Map<string, number> = new Map()
127
128    @State cityNames: string[] = []
129
130    @State cityName: string | null = null
131
132    @State cityCode: number = 0
133
134    @State editMode: boolean = false
135
136    @State uiContext: UIContext = this.getUIContext() // 由于不支持this绑定, 为解决this指针问题, 有些地方需要使用它。
137
138    async aboutToAppear(){
139      await this.refreshDbStr()
140    }
141
142    async refreshDbStr(){
143      let db = await PreferencesUtils.getAllPreferenceValue()
144      let dbStr: string = JSON.stringify(db)
145
146      let cityMapTemp: Map<string, number> = new Map()
147      let cityNamesTemp: string[] = []
148      if(dbStr.length > 2) {
149        dbStr = dbStr.substring(1, dbStr.length - 1)
150
151        dbStr = dbStr.substring(0, dbStr.length - 1)
152      }
153
154      let dbTemp: any = JSON.parse(dbStr)
155
156      for(let key in dbTemp) {
157        let value = dbTemp[key]
158        if(value.type === 'number') {
159          cityMapTemp.set(key, value.value)
160        } else if(value.type === 'string') {
161          cityNamesTemp.push(value.value)
162        }
163      }
164
165      this.cityMap = cityMapTemp
166      this.cityNames = cityNamesTemp
167
168      this.cityName = null
169      this.cityCode = 0
170
171      this.editMode = false
172
173      this.uiContext = this.getUIContext() // 由于不支持this绑定, 为解决this指针问题, 有些地方需要使用它。
174
175    }
176
177  }
178
179  @Entry
180  @Component
181  struct Index { // 页面跳转: https://developer.huawei.com/consumer/cn/training/course/slightMock/C10171749712290947
182   ...
183 }
```

4.点击“删除”按钮，可以删除对应的列表项。

Weather - Index.ets [entry]

The screenshot shows the Huawei DevEco Studio interface. The left panel displays the project structure with files like AppScope, entry, src, and various ETS files. The main editor window shows the code for Index.ets, which includes imports, class definitions, and methods for handling city lists. The right side features a 'Previewer' window showing a mobile application interface titled '城市列表' (City List) with a search bar and two city entries: '上海市' and '北京市'. A confirmation dialog box is overlaid on the screen, asking '是否将上海市从列表中删除?' (Delete Shanghai from the list?).

Weather - Index.ets [entry]

This screenshot is nearly identical to the one above, showing the same code in Index.ets and the same mobile application preview. The difference is in the confirmation dialog, which now displays '删除成功' (Delete successful) instead of the question.

5.点击“完成”，结束编辑。

Weather - Index.ets [entry]

```

18     duration: 2000
19   }
20 } catch (error) {
21   let message = (error as BusinessError).message;
22   let code = (error as BusinessError).code;
23   console.error(`showToast args error code is ${code}, message is ${message}`);
24 }
25
26 @Entry
27 @Component
28 struct Index { // 页签跳转: https://developer.huawei.com/consumer/cn/training/course/slightMooc/C10171749712299047
29   @State geoKey: string = '70472dd6f980aad13558b550e93868f25'
30
31   @State geoUrl: string = 'https://restapi.amap.com/v3/config/district?key=' + this.geoKey + '&keywords='
32
33   @State cityMap: Map<string, number> = new Map()
34
35   @State cityName: string[] = []
36
37   @State cityName: string | null = null
38
39   @State cityCode: number = 0
40
41   @State editMode: boolean = false
42
43   @State uiContext: UIContext = this.getUIContext() // 由于不支持this绑定, 为解决this指针问题, 有些地方需要使用它。
44
45   async aboutToAppear(){
46     await this.refreshDbStr()
47   }
48
49   async refreshDbStr(){
50     let db = await PreferencesUtils.getAllPreferenceValue()
51     let dbStr: string = JSON.stringify(db)
52
53     let cityMapTemp: Map<string, number> = new Map()
54     let cityNameTemp: string[] = []
55     if(dbStr.length > 2) {
56       dbStr = dbStr.substring(1, dbStr.length - 1)
57
58       dbStr = dbStr.split(',')
59       for(let item of dbStr) {
60         let itemTemp = item.split(':')
61         let key = itemTemp[0]
62         let value = itemTemp[1]
63         cityMapTemp.set(key, value)
64         cityNameTemp.push(key)
65       }
66
67       this.cityMap = cityMapTemp
68       this.cityName = cityNameTemp
69     }
70
71   }
72
73   let editManTems: Map<string, number> = new Map()
74
75   Index > refreshDbStr() > cityMap

```

6. 点击列表项，可以跳转到对应城市的天气详情页。天气详情页采用Tab布局，可以查看当前天气和预测天气。其中天气信息是通过调用高德api获取的。

(注：WebView控件无法正常在预览器上展示，可以使用真机或模拟器)

Weather - Index.ets [entry]

```

15   try {
16     uiContext.getPromptAction().showToast({
17       message: info,
18       duration: 2000
19     })
20   } catch (error) {
21     let message = (error as BusinessError).message;
22     let code = (error as BusinessError).code;
23     console.error(`showToast args error code is ${code}, message is ${message}`);
24   }
25
26 @Entry
27 @Component
28 struct Index { // 页签跳转: https://developer.huawei.com/consumer/cn/training/course/slightMooc/C10171749712299047
29   @State geoKey: string = '70472dd6f980aad13558b550e93868f25'
30
31   @State geoUrl: string = 'https://restapi.amap.com/v3/config/district?key=' + this.geoKey + '&keywords='
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33   @State cityMap: Map<string, number> = new Map()
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35   @State cityName: string[] = []
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37   @State cityName: string | null = null
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39   @State cityCode: number = 0
40
41   @State editMode: boolean = false
42
43   @State uiContext: UIContext = this.getUIContext() // 由于不支持this绑定, 为解决this指针问题, 有些地方需要使用它。
44
45   async aboutToAppear(){
46     await this.refreshDbStr()
47   }
48
49   async refreshDbStr(){
50     let db = await PreferencesUtils.getAllPreferenceValue()
51     let dbStr: string = JSON.stringify(db)
52
53     let cityMapTemp: Map<string, number> = new Map()
54     let cityNameTemp: string[] = []
55     if(dbStr.length > 2) {
56       dbStr = dbStr.substring(1, dbStr.length - 1)
57
58       dbStr = dbStr.split(',')
59       for(let item of dbStr) {
60         let itemTemp = item.split(':')
61         let key = itemTemp[0]
62         let value = itemTemp[1]
63         cityMapTemp.set(key, value)
64         cityNameTemp.push(key)
65       }
66
67       this.cityMap = cityMapTemp
68       this.cityName = cityNameTemp
69     }
70
71   }
72
73   let editManTems: Map<string, number> = new Map()
74
75   Index > refreshDbStr() > cityMap

```

Weather - Index.ets [entry]

```

try {
    uiContext.getPromptAction().showToast({
        message: info,
        duration: 2000
    })
} catch (error) {
    let message = error as BusinessError.message;
    let code = error as BusinessError.code;
    console.error(`showToast args error code is ${code}, message is ${message}`);
}

@Entry
@Component
struct Index { // 页面跳转, https://developer.huawei.com/consumer/cn/training/course/slightMock/C10171749712298947
    @State geoKey: string = '70472d6f980aad135586550e93868f25'

    @State geoUrl: string = 'https://restapi.map.com/v3/config/district?key=' + this.geoKey + '&keywords='

    @State cityMap: Map<string, number> = new Map()

    @State cityNames: string[] = []

    @State cityName: string | null = null

    @State cityCode: number = 0

    @State editMode: boolean = false

    @State uiContext: UIContext = this.getUIContext() // 由于不支持this绑定, 为解决this指针问题, 有些地方需要使用它.

    async aboutToAppear(){
        await this.refreshDbStr()
    }

    async refreshDbStr(){
        let db = await PreferencesUtils.getAllPreferenceValue()
        let dbStr: string = JSON.stringify(db)

        let cityMapTemp: Map<string, number> = new Map()
    }
}

```

App Launch: Select a device first. (48 minutes ago)

Weather - WeatherDetail.ets [entry]

```

reject(new Error("Request failed with status " + res.responseCode));
}).catch((err: BusinessError)=>{
    console.log(err.name);
    reject(err);
})
}

build() {
    Tabs({ barPosition: BarPosition.End }){

        TabContent(){
            Column() {
                titleBar()
                Column({space: 10}){
                    Text(this.provinceName + " " + this.cityName)
                    .fontSize(30).height(50).width('100%').margin(10).textAlign(TextAlign.Center)
                    Text('今日天气')
                    .fontSize(20).fontWeight(800).width('100%')
                    Column({space:10}){
                        Text('气温: ' + this.todayWeather.daytemp)
                        .fontSize(22).fontColor(Color.Brown)
                        Image(this.judgeWeatherImage(this.todayWeather))
                        .width(80).height(50).objectFit(ImageFit.Contain)
                        Text('夜温: ' + this.todayWeather.nighttemp + '-' + this.todayWeather.daytemp + 'C')
                        .fontSize(22).fontColor(Color.Brown)
                    }.width('70%').border({width:1,color:Color.Pink}).margin(20)
                    .borderRadius(30).backgroundImage("media/backgroundPicture_default.jpg")
                    .backgroundImageSize(ImageSize.Cover)
                }
                .width('100%')
                .height('100%')
                .padding(10)
            }
        }
    }
}

```

App Launch: Select a device first. (49 minutes ago)

7.点击左上角返回按钮回到主页。

The screenshot shows the WeChat DevTools IDE interface. The left sidebar displays the project structure, including AppScope, entry, build, src (with main, ets, Util, resources, module.json5, mock, ohosTest, test, .gitignore), image, and oh\_modules. The main editor window shows the WeatherDetail.ets file with code related to weather data retrieval and UI rendering. The right side features a mobile phone preview window showing a weather application with two cities listed: Beijing and Nanjing. The bottom status bar indicates the time as 14:57 and the date as 2024/11/6.

```
78     reject(new Error("Request failed with status " + res.responseCode));
79   }
80   }).catch((err: BusinessError)=>{
81     console.log(err.name);
82     reject(err);
83   })
84 }
85
86 build() {
87   Tabs({ barPosition: BarPosition.End }) {
88     TabContent() {
89       Column() {
90         titleBar()
91         Column({space: 10}) {
92           Text(this.provinceName + " " + this.cityName)
93             .fontSize(30).height(50).width('100%').margin(10).textAlign(TextAlign.Center)
94           Text('今日天气。')
95             .fontSize(20).fontWeight(800).width('100%')
96           Column({space:10}) {
97             Text('天气情况：' + this.todayWeather.dayweather)
98               .fontSize(22).fontColor(Color.Brown)
99               Image(this.judgeWeatherImage(this.todayWeather))
100              .width(80).height(50).objectFit(ImageFit.Contain)
101             Text('气温：' + this.todayWeather.nighttemp + '-' + this.todayWeather.daytemp + '°C')
102               .fontSize(22).fontColor(Color.Brown)
103             Image(this.judgeWeatherImage(this.todayWeather))
104               .width(70).border({width:1,color:Color.Pink}).margin(20)
105               .borderRadius(30).backgroundColor("#ffbbac1").padding(10)
106               WebComponent()
107             .width('100%')
108             .height('100%')
109             .padding(10)
110             .backgroundImage('media/backgroundPicture_default.jpg')
111             .backgroundImageSize(ImageSize.Cover)
112           }
113         }
114       }
115     }
116   }
117 }
```

## 8.重新运行项目，发现数据成功保存。

This screenshot shows the WeChat DevTools IDE after running the project. The left sidebar and code editor are identical to the previous screenshot. The bottom status bar now shows the time as 10:53 and the date as 2024/11/6. A 'Run' section in the bottom-left corner shows the command 'entry' and the output '11/06 21:02:01: Launching com.example.weather'. The right side shows the mobile phone preview with the same weather application interface.

```
61   }
62 }
63
64 // 调用高德api获取天气数据
65 getForecastWeather(){
66   return new Promise<WeatherModel>((resolve,reject)=>{
67     let request = http.createHttp()
68     let url= this.weatherUrl
69     let options = {
70       method: http.RequestMethod.GET,
71       header: {'Content-Type':'application/json'},
72       } as http.HttpRequestOptions
73       let result = request.request(url, options)
74       result.then((res)>{
75         if (res.responseCode === 200) {
76           resolve(JSON.parse(res.result.toString()));
77         } else {
78           reject(new Error("Request failed with status " + res.responseCode));
79         }
80       }).catch((err: BusinessError)=>{
81         console.log(err.name);
82         reject(err);
83       })
84   }
85 }
86
87 }
```