





OrderID	BikeID	StartTime	StartLongitude	StartLatitude	EndTime	EndLongitude	EndLatitude	Distance	StartDistance	EndDistance	TotalCyclingTime	Cost
1	0447OP	2018-02-05 15:57:22	114.2664457	30.57371788	2018-02-05 15:59:26	114.2661969	30.5723752	202	17542	17396	124	1.00
2	0447OP	2018-02-05 16:01:27	114.2661969	30.5723752	2018-02-05 16:03:27	114.2716095	30.56991259	1056	17396	17050	120	1.00
3	0447OP	2018-02-05 16:03:27	114.2716095	30.56991259	2018-02-05 16:05:29	114.2661969	30.5723752	1388	17050	17396	122	1.00
4	0447OP	2018-02-05 16:19:54	114.2661969	30.5723752	2018-02-05 16:21:56	114.2716095	30.56991259	1056	17396	17050	122	1.00
5	0447OP	2018-02-05 16:21:56	114.2716095	30.56991259	2018-02-05 16:24:08	114.2661969	30.5723752	1388	17050	17396	132	1.00
6	0447zx	2018-02-05 22:21:53	114.3726315	30.50907043	2018-02-05 22:24:02	114.3795957	30.50522961	2658	2536	1748	129	1.00
7	0447zx	2018-02-05 22:49:54	114.3795957	30.50522961	2018-02-05 22:51:58	114.3740577	30.50754631	1251	1748	2438	124	1.00
8	044yol	2018-02-05 23:17:20	114.3544669	30.57670501	2018-02-05 23:21:21	114.3627122	30.57516632	1768	12153	12015	241	1.00
9	044yol	2018-02-05 23:45:27	114.3627122	30.57516632	2018-02-05 23:49:21	114.3571826	30.57747983	2807	12015	12423	234	1.00
10	044YrL	2018-02-05 05:01:08	114.3460748	30.56791039	2018-02-05 05:03:18	114.3451524	30.56406776	476	10809	10837	130	1.00
11	044YrL	2018-02-05 17:02:23	114.3451524	30.56406776	2018-02-05 17:04:35	114.3515623	30.56558068	1860	10837	10779	132	1.00
12	044YrL	2018-02-05 17:08:51	114.3515623	30.56558068	2018-02-05 17:11:00	114.346048	30.56791533	1412	10779	10809	129	1.00
13	044YrL	2018-02-05 17:19:59	114.346048	30.56791533	2018-02-05 17:22:07	114.3515623	30.56558068	2336	10809	10779	128	1.00
14	044YrL	2018-02-05 17:24:16	114.3515623	30.56558068	2018-02-05 17:26:23	114.346048	30.56791533	1412	10779	10809	127	1.00
15	044YrL	2018-05-02 11:54:16	114'3212053	30'20228008	2018-05-02 11:56:53	114'340048	30'20101233	1415	10110	10800	151	1.00
16	044YrL	2018-05-02 11:58:20	114'340048	30'20101233	2018-05-02 11:59:01	114'3212053	30'20228008	5330	10800	10110	158	1.00
17	044YrL	2018-05-02 11:08:21	114'3212053	30'20228008	2018-05-02 11:11:00	114'340048	30'20101233	1415	10110	10800	150	1.00
18	044YrL	2018-05-02 11:05:53	114'340048	30'20101233	2018-05-02 11:04:32	114'3212053	30'20228008	1800	10831	10110	135	1.00
19	044YrL	2018-05-02 02:01:08	114'340048	30'20101233	2018-05-02 02:03:18	114'340048	30'20101233	410	10800	10831	130	1.00
20	044YrL	2018-05-02 23:40:51	114'3051155	30'01010035	2018-05-02 23:40:51	114'3051155	30'01010035	5001	15010	15010	500	1.00

```
let sourceLocation = CLLocationCoordinate2D(latitude: Double(beginy)!,
                                           longitude: Double(beginx)!)
let destinationLocation = CLLocationCoordinate2D(latitude: Double(endy)!,
                                                  longitude: Double(endx)!)
let sourcePlacemark = MKPlacemark(coordinate: sourceLocation, addressDictionary: nil)
let destinationPlacemark = MKPlacemark(coordinate: destinationLocation, addressDictionary: nil)

let sourceMapItem = MKMapItem(placemark: sourcePlacemark)
let destinationMapItem = MKMapItem(placemark: destinationPlacemark)
let sourceAnnotation = MKPointAnnotation()
sourceAnnotation.title = "Origin"

if let location = sourcePlacemark.location {
    sourceAnnotation.coordinate = location.coordinate
}
let destinationAnnotation = MKPointAnnotation()
destinationAnnotation.title = "Destination"
```

```
#import <AMapFoundationKit/AMapFoundationKit.h>
#import <AMapSearchKit/AMapSearchKit.h>
#import <MAMapKit/MAMapKit.h>
```

单车轨迹与武汉市道路数据可视化

地图标注：

使用高德开放平台的IOS地图SDK，
将UIStoryboard界面设计接口， 部分封装到SwiftUI框架；

路径规划：

使用高德Web服务API。

单车与公路骑行数据分析展示

单车：

部分数据使用高德开放平台Web服务API所得， 部分数据计算所得；

公交车：

数据使用高德开放平台Web服务API所得。

ID	IsValid	Cost	Duration	WalkingDistance
1	0	0.00	0	0
2	0	0.00	0	0
3	1	1.00	1543	805
4	0	0.00	0	0
5	1	1.00	1543	805
6	1	2.00	1078	208
7	1	2.00	1269	466
8	1	1.00	1758	1085
9	0	0.00	0	0
10	0	0.00	0	0
11	0	0.00	0	0
12	1	2.00	1521	686
13	1	1.00	1587	829
14	1	2.00	1521	686
15	1	1.00	1587	829
16	1	2.00	1521	686
17	0	0.00	0	0
18	1	1.00	1040	482
19	0	0.00	0	0
20	1	1.00	1040	482
21	0	0.00	0	0
22	1	1.00	1040	482
23	0	0.00	0	0
24	0	0.00	0	0
25	1	1.00	1766	539
52	1	1.00	1199	238
54	0	0.00	0	0
53	0	0.00	0	0
55	1	1.00	1040	482
51	0	0.00	0	0
50	1	1.00	1040	482
48	0	0.00	0	0



新势力突围战



9:52



Welcome to the

Bike-sharing
&
City Impression

