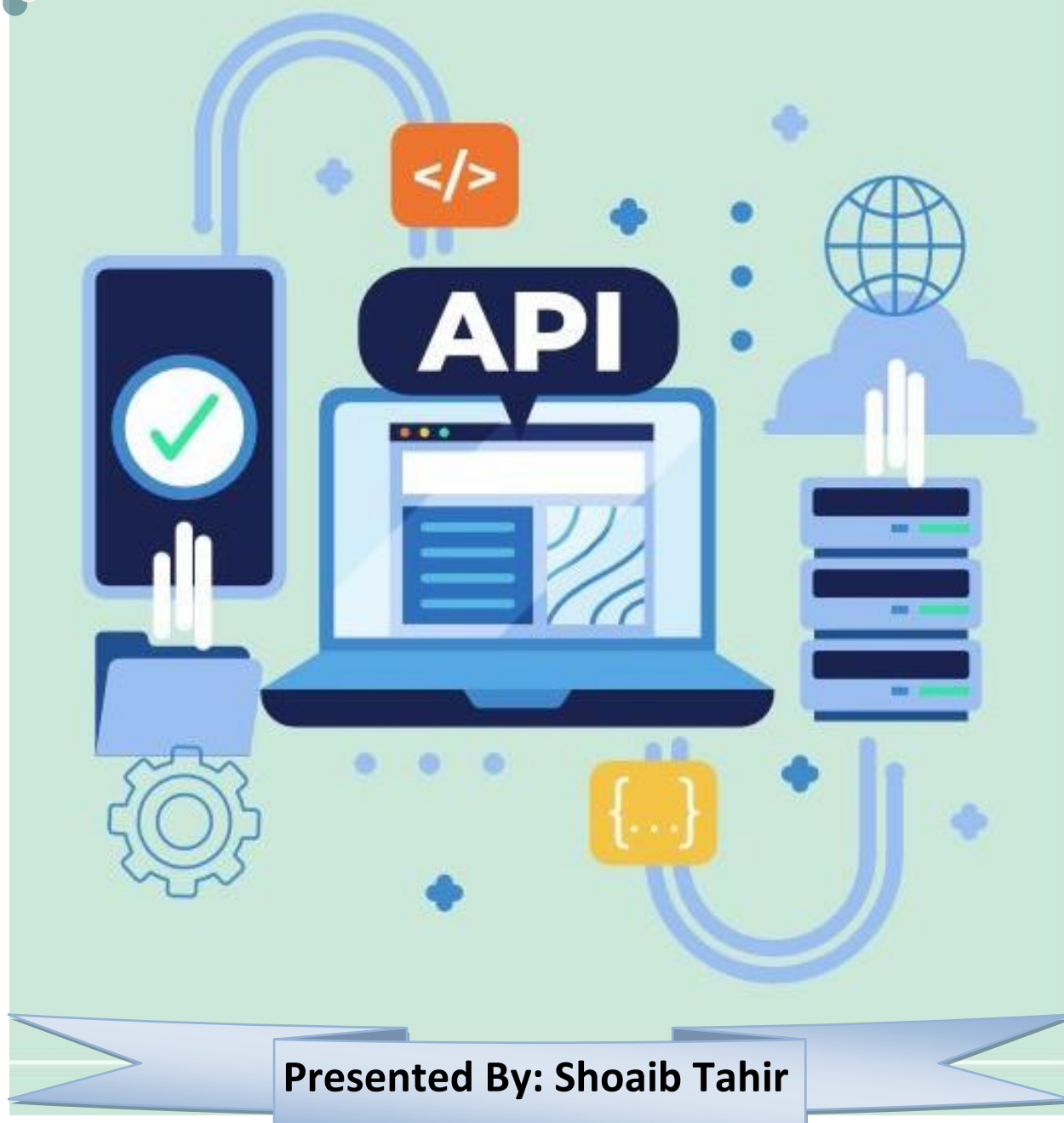


# API Integration and Data Migration Report



**Presented By: Shoaib Tahir**

This documentation explains the work done on Day 3 of the Rental E-commerce Marketplace hackathon. It includes custom database setup, integrating data from Sanity, creating schemas, and showing data using GROQ queries in a Next.js app. Each part is explained simply with details about how the code works.

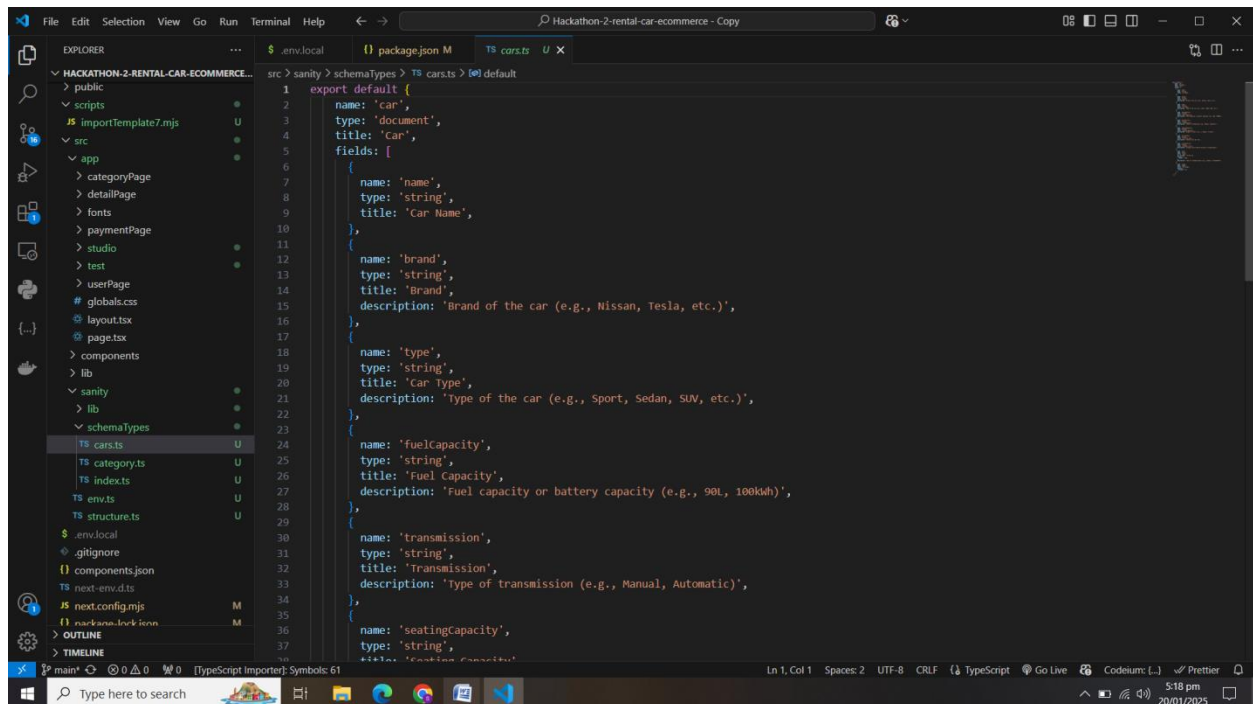
### 1. Sanity CMS Schema Design:

To ensure the smooth handling of car data, I designed a schema called **car** in Sanity CMS. The schema includes the following fields:

- **Rental Product Schema Fields:**

- **Name:** The name of the product (text).
- **Brand:** The brand of the product (text).
- **Type:** The type or category of the product (text).
- **Fuel Capacity:** The fuel capacity of the product (number).
- **Transmission:** The transmission type (e.g., manual or automatic) (text).
- **Seating Capacity:** The number of people the product can seat (number).
- **Price Per Day:** The rental price per day (number).
- **Original Price:** The original price of the product (number).
- **Tags:** A list of tags for categorization (list of text).
- **Image:** The product's image (image).

### Code Snap:



```
1 export default {
2   name: 'car',
3   type: 'document',
4   title: 'Car',
5   fields: [
6     {
7       name: 'name',
8       type: 'string',
9       title: 'Car Name',
10    },
11    {
12      name: 'brand',
13      type: 'string',
14      title: 'Brand',
15      description: 'Brand of the car (e.g., Nissan, Tesla, etc.)',
16    },
17    {
18      name: 'type',
19      type: 'string',
20      title: 'Car Type',
21      description: 'Type of the car (e.g., Sport, Sedan, SUV, etc.)',
22    },
23    {
24      name: 'fuelCapacity',
25      type: 'string',
26      title: 'Fuel Capacity',
27      description: 'Fuel capacity or battery capacity (e.g., 90L, 100kWh)',
28    },
29    {
30      name: 'transmission',
31      type: 'string',
32      title: 'Transmission',
33      description: 'Type of transmission (e.g., Manual, Automatic)',
34    },
35    {
36      name: 'seatingCapacity',
37      type: 'string',
38      title: 'Seating Capacity'
39    }
40  ]
41 }
```

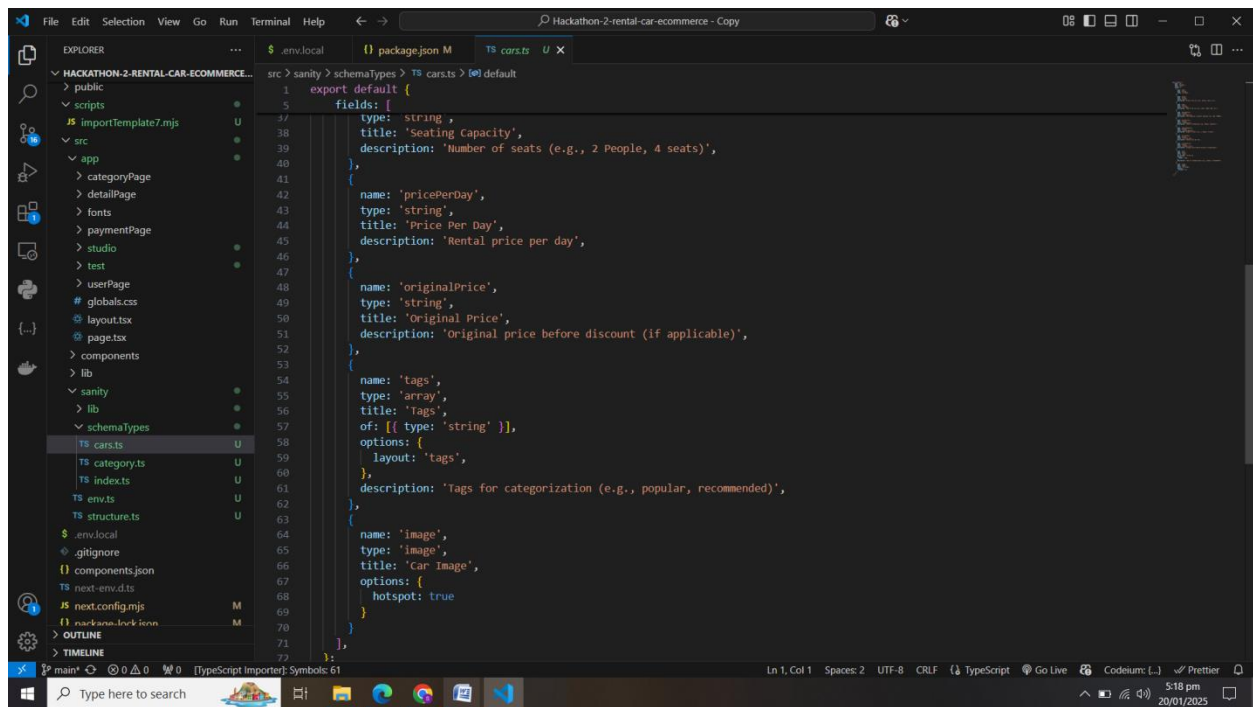
## 2. API Integration and Data Migration:

- **API Data Fetching:**

I retrieved product data from an external API, including:

- Name
- Brand
- Type
- Fuel Capacity
- Transmission
- Seating Capacity
- Price Per Day
- Original Price
- Tags
- Image

This data was mapped directly to the Sanity CMS schema.



The screenshot shows a VS Code editor window with a file explorer on the left and a code editor on the right. The file explorer shows a project structure for 'HACKATHON-2-RENTAL-CAR-E-COMMERCE...'. The code editor displays a TypeScript file named 'src > sanity > schemaTypes > TS cars.ts'. The code defines a Sanity schema for cars, including fields for name, brand, type, fuel capacity, transmission, seating capacity, price per day, original price, tags, and image. The schema is exported as 'export default { fields: [...] }'.

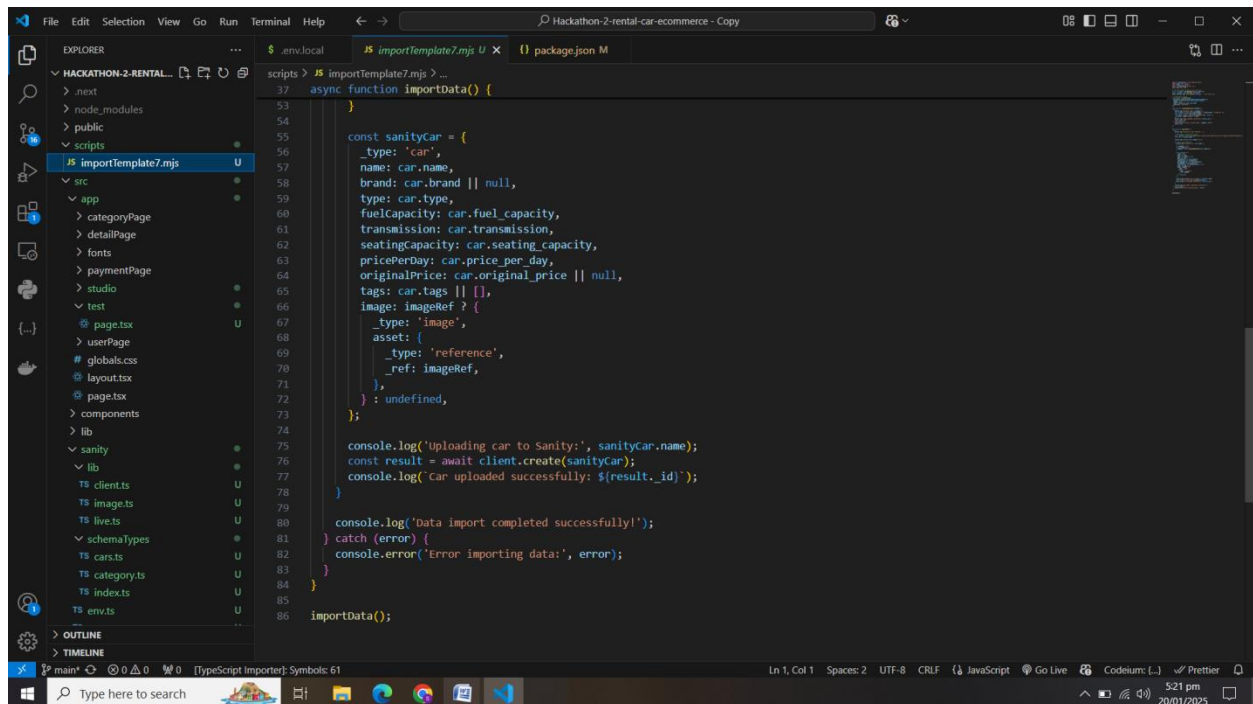
```
src > sanity > schemaTypes > TS cars.ts > default
1 export default {
2   fields: [
3     {
4       type: 'string',
5       title: 'Seating Capacity',
6       description: 'Number of seats (e.g., 2 People, 4 seats)',
7     },
8     {
9       name: 'pricePerDay',
10      type: 'string',
11      title: 'Price Per Day',
12      description: 'Rental price per day',
13     },
14     {
15       name: 'originalPrice',
16       type: 'string',
17       title: 'Original Price',
18       description: 'Original price before discount (if applicable)',
19     },
20     {
21       name: 'tags',
22       type: 'array',
23       title: 'Tags',
24       of: [{ type: 'string' }],
25       options: {
26         layout: 'tags',
27       },
28       description: 'Tags for categorization (e.g., popular, recommended)',
29     },
30     {
31       name: 'image',
32       type: 'image',
33       title: 'Car Image',
34       options: {
35         hotspot: true
36       }
37     }
38   ]
39 }
```

- **Data Population in Sanity CMS:**

After fetching data from the API, I filled the car fields in Sanity CMS automatically. This made sure the car information was consistent and accurate across the platform.

- **Data Migration:**

Using the Sanity CLI, I backed up the dataset from Sanity CMS and later imported it again for testing. This ensured all data was well-organized and displayed correctly on the frontend.



```
File Edit Selection View Go Run Terminal Help Hackathon-2-rental-car-ecommerce - Copy
EXPLORER
HACKATHON-2-RENTAL-CAR-ECOMMERCE
  .next
  node_modules
  public
  scripts
    JS importTemplate7.mjs
  src
  app
  categoryPage
  detailPage
  fonts
  paymentPage
  studio
  test
    page.tsx
  userPage
  globals.css
  layout.tsx
  page.tsx
  components
  lib
  sanity
  lib
    client.ts
    image.ts
    live.ts
    schemaTypes
  cars.ts
  category.ts
  index.ts
  env.ts
  OUTLINE
  TIMELINE

scripts > JS importTemplate7.mjs > ...
37 async function importData() {
38
39 }
40
41 const sanityCar = {
42   _type: 'car',
43   name: car.name,
44   brand: car.brand || null,
45   type: car.type,
46   fuelCapacity: car.fuel_capacity,
47   transmission: car.transmission,
48   seatingCapacity: car.seating_capacity,
49   pricePerDay: car.price_per_day,
50   originalPrice: car.original_price || null,
51   tags: car.tags || [],
52   image: imageRef ? {
53     _type: 'image',
54     asset: {
55       _type: 'reference',
56       _ref: imageRef,
57     },
58   } : undefined,
59 };
60
61 console.log('Uploading car to Sanity:', sanityCar.name);
62 const result = await client.create(sanityCar);
63 console.log('Car uploaded successfully: ${result.id}');
64 }
65
66 console.log('Data import completed successfully!');
67 ) catch (error) {
68   console.error('Error importing data:', error);
69 }
70
71 importData();
```

### 3. Steps Taken for Data Migration:

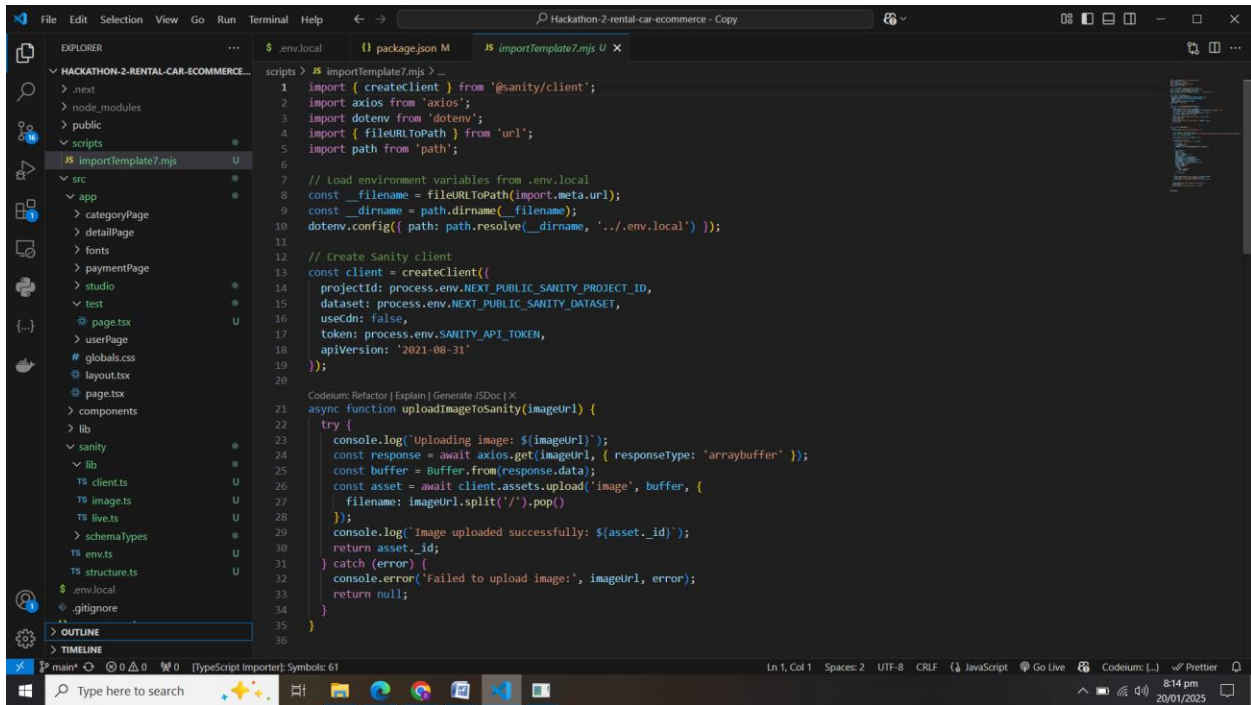
- **Exporting Data:**

The first step was to export the data from Sanity CMS using the Sanity CLI. This made sure all the car data was safely backed up before doing anything else.

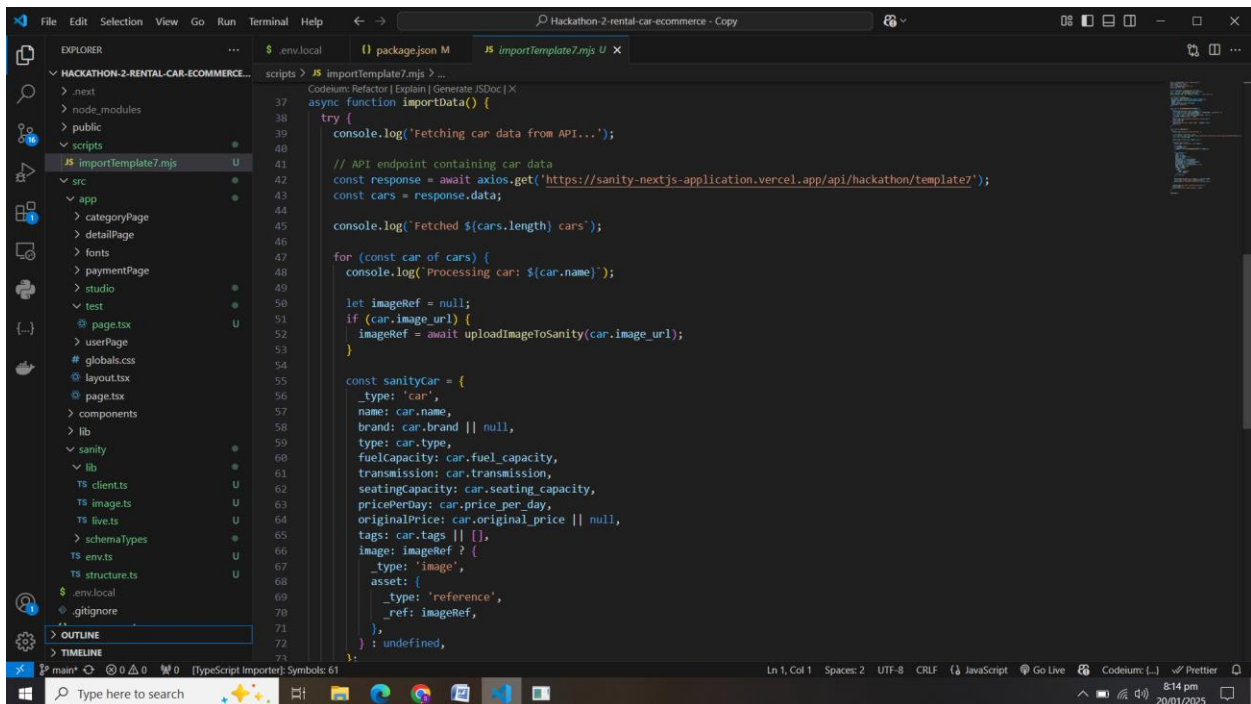
- **Verification of Data:**

The exported JSON file was checked to make sure all the fields were filled correctly. This step ensured the data would be shown properly on the frontend when fetched.

## Day 3: API Integration and Data Migration for Rental E-Commerce Marketplace

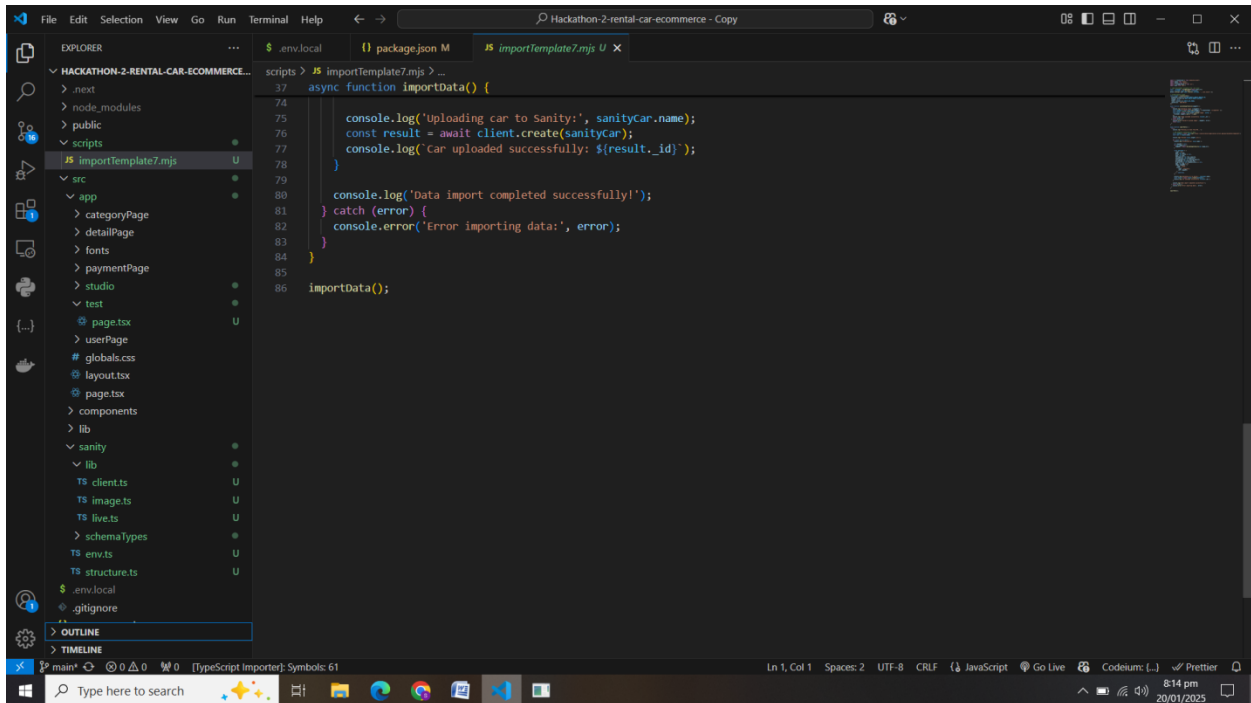


```
1 import { createClient } from '@sanity/client';
2 import axios from 'axios';
3 import dotenv from 'dotenv';
4 import { fileURLToPath } from 'url';
5 import path from 'path';
6
7 // Load environment variables from .env.local
8 const __filename = fileURLToPath(import.meta.url);
9 const __dirname = path.dirname(__filename);
10 dotenv.config({ path: path.resolve(__dirname, '../.env.local') });
11
12 // Create Sanity client
13 const client = createClient({
14   projectId: process.env.NEXT_PUBLIC_SANITY_PROJECT_ID,
15   dataset: process.env.NEXT_PUBLIC_SANITY_DATASET,
16   useCdn: false,
17   token: process.env.SANITY_API_TOKEN,
18   apiVersion: '2021-08-31'
19 });
20
21 async function uploadImageToSanity(imageUrl) {
22   try {
23     console.log('Uploading image: ${imageUrl}');
24     const response = await axios.get(imageUrl, { responseType: 'arraybuffer' });
25     const buffer = Buffer.from(response.data);
26     const asset = await client.assets.upload('image', buffer, {
27       filename: imageUrl.split('/').pop()
28     });
29     console.log('Image uploaded successfully: ${asset.id}');
30     return asset.id;
31   } catch (error) {
32     console.error('Failed to upload image:', imageUrl, error);
33     return null;
34   }
35 }
36
```



```
37
38 async function importData() {
39   try {
40     console.log('Fetching car data from API...');
41
42     // API endpoint containing car data
43     const response = await axios.get('https://sanity-nextjs-application.vercel.app/api/hackathon/template7');
44     const cars = response.data;
45
46     console.log(`Fetched ${cars.length} cars`);
47
48     for (const car of cars) {
49       console.log(`Processing car: ${car.name}`);
50
51       let imageRef = null;
52       if (car.image_url) {
53         imageRef = await uploadImageToSanity(car.image_url);
54       }
55
56       const sanityCar = {
57         _type: 'car',
58         name: car.name,
59         brand: car.brand || null,
60         type: car.type,
61         fuelCapacity: car.fuel_capacity,
62         transmission: car.transmission,
63         seatingCapacity: car.seating_capacity,
64         pricePerDay: car.price_per_day,
65         originalPrice: car.original_price || null,
66         tags: car.tags || [],
67         image: imageRef ? {
68           _type: 'image',
69           asset: {
70             _type: 'reference',
71             _ref: imageRef,
72           },
73         } : undefined,
74       };
75     }
76   }
77 }
```

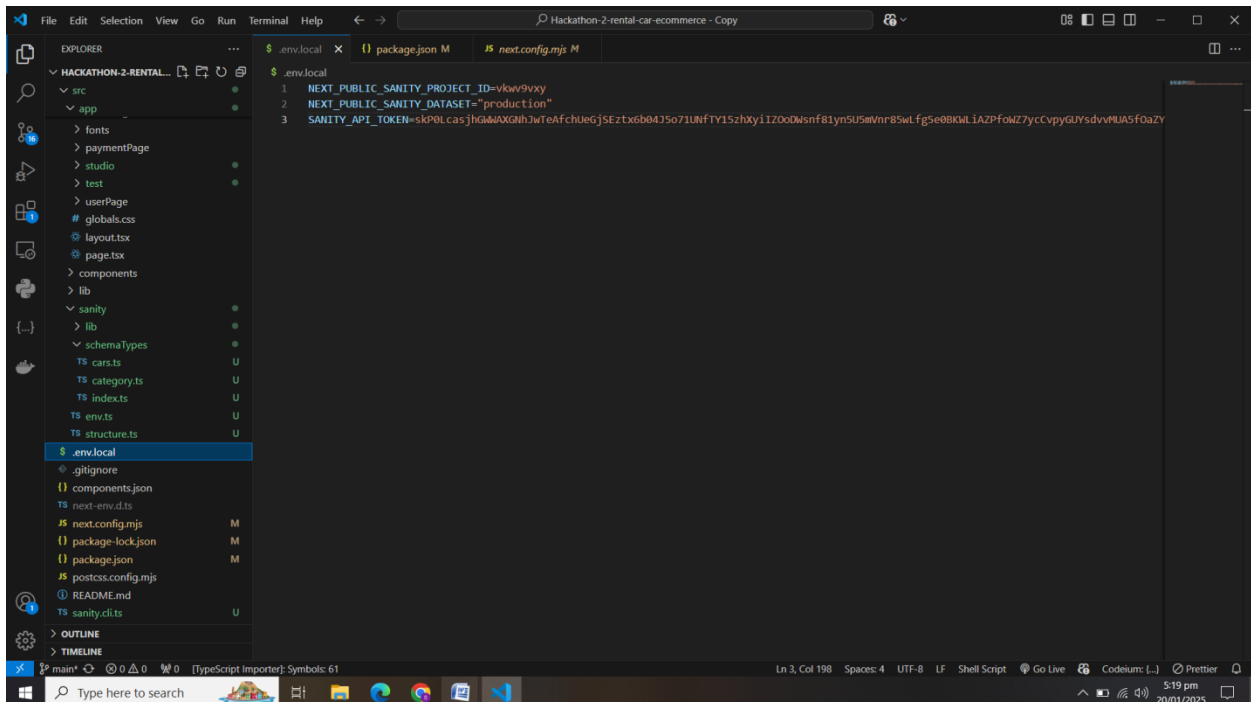
## Day 3: API Integration and Data Migration for Rental E-Commerce Marketplace



```
importTemplate7.mjs
37 async function importData() {
74
75   console.log('Uploading car to Sanity:', sanityCar.name);
76   const result = await client.create(sanityCar);
77   console.log('Car uploaded successfully: ${result.id}');
78 }
79
80 console.log('Data import completed successfully!');
81 } catch (error) {
82   console.error('Error importing data:', error);
83 }
84 }
85
86 importData();
```

- **Environment Variables**

The .env file contains sensitive settings for the RentalHub application. Key entries:

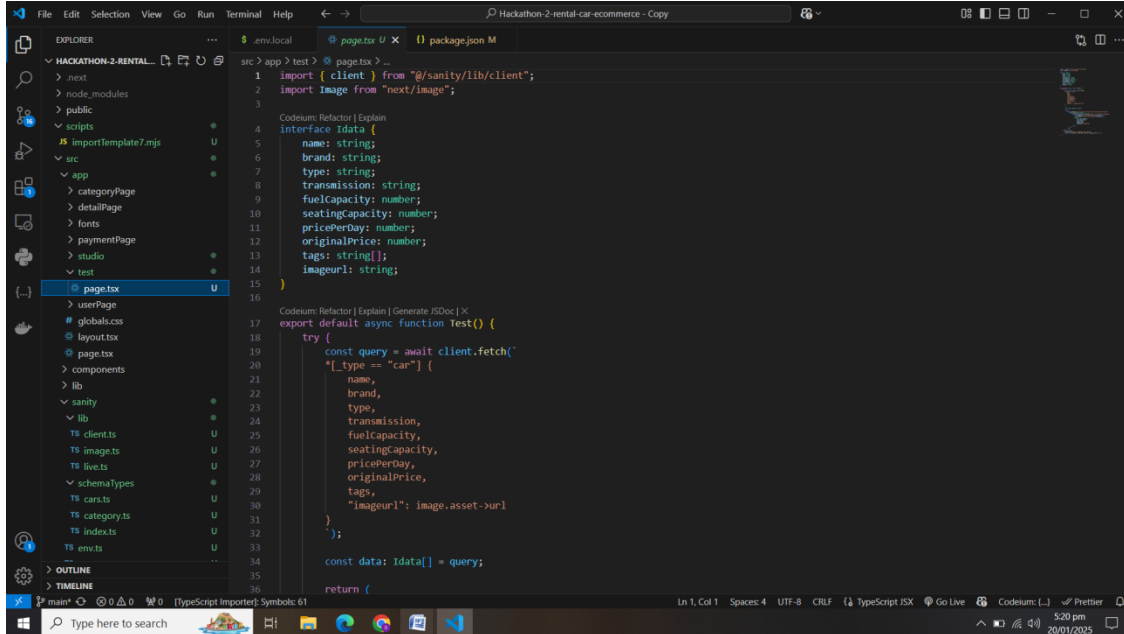


```
.env.local
1 NEXT_PUBLIC_SANITY_PROJECT_ID=vkav9vxy
2 NEXT_PUBLIC_SANITY_DATASET="production"
3 SANITY_API_TOKEN=skp8LcasjhGdWAGNhh3WteAfcHueGjSEztX6b0435o71UNFTY15zhxyi1Z0oDmsnf81yn5U5wVnr85wLfg5e0BKMLIAZPF0WZ7ycCvpyGuvsdvvMUA5f0aZY
```



### • Item Card Code

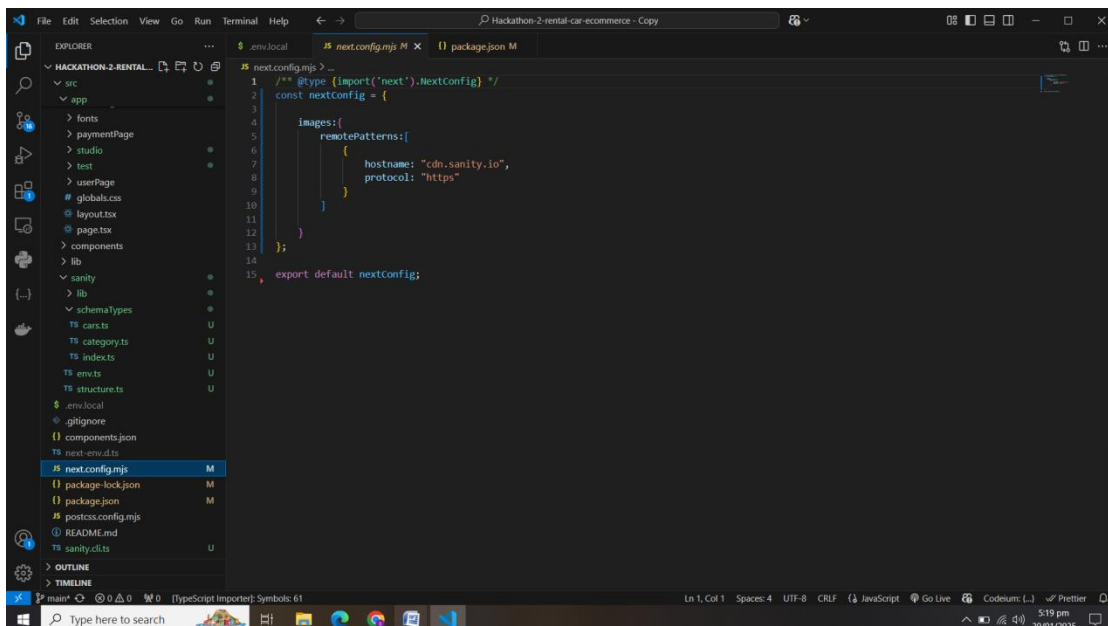
This code defines the design and functionality of a single product card. It is used on the client page to display individual items.



```
1 import { client } from '@sanity/lib/client';
2 import Image from 'next/image';
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000
```

### • Next.js Image Configuration

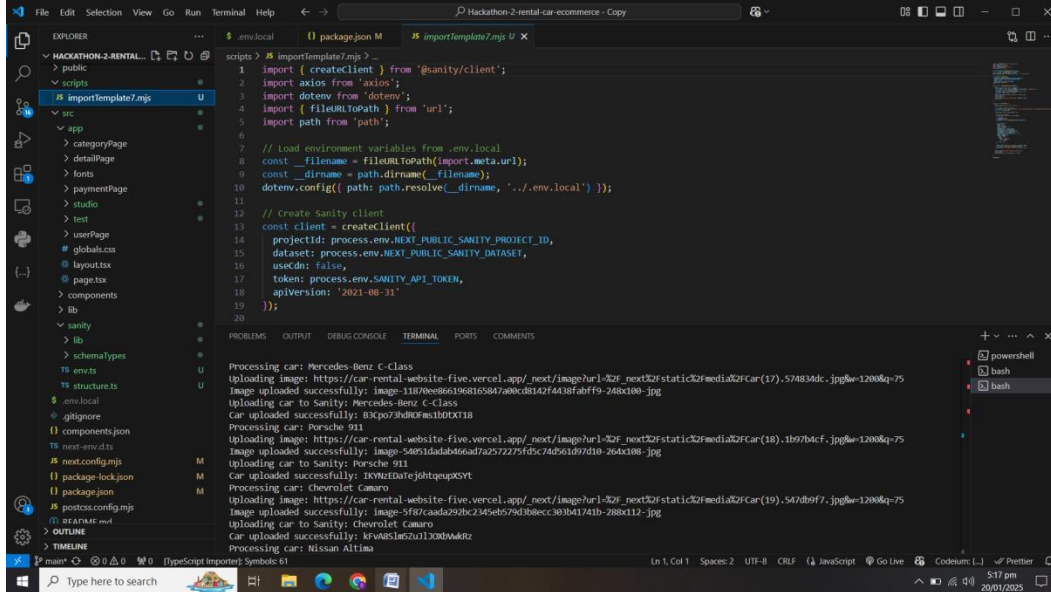
This code is used to allow images from an external source (like Sanity) to be used in a Next.js application. It specifies that images with the hostname "cdn.sanity.io" and the "https" protocol can be displayed in the app.



```
1 /** @type {import('next').NextConfig} */
2 const nextConfig = {
3
4   images: {
5     remotePatterns: [
6       {
7         hostname: 'cdn.sanity.io',
8         protocol: 'https'
9       }
10     ]
11   },
12
13 };
14
15 export default nextConfig;
```

- **Successfully Migrated Data Into Sanity:**

The data was successfully moved into Sanity, ensuring all product information was correctly placed and ready to use.



```
import { createClient } from '@sanity/client';
import axios from 'axios';
import dotenv from 'dotenv';
import { fileURLToPath } from 'url';
import path from 'path';

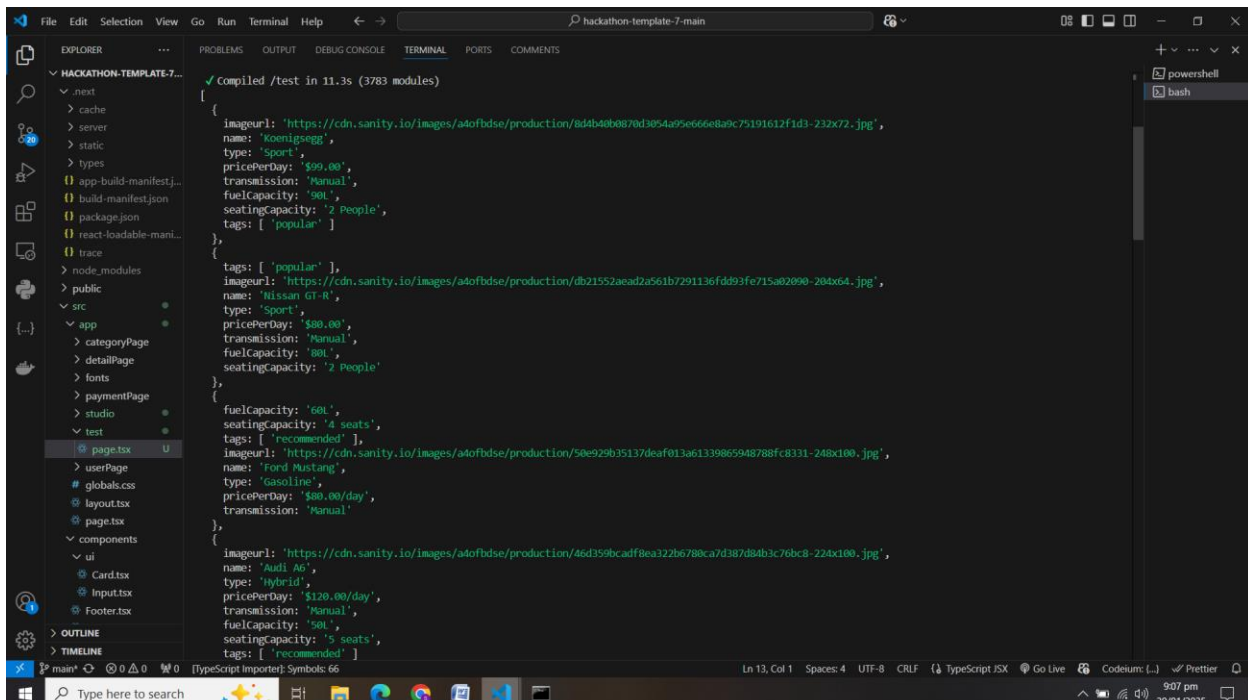
// Load environment variables from .env.local
const __filename = fileURLToPath(import.meta.url);
const __dirname = path.dirname(__filename);
dotenv.config({ path: path.resolve(__dirname, '../.env.local') });

// Create Sanity client
const client = createClient({
  projectId: process.env.NEXT_PUBLIC_SANITY_PROJECT_ID,
  dataset: process.env.NEXT_PUBLIC_SANITY_DATASET,
  useCdn: false,
  token: process.env.SANITY_API_TOKEN,
  apiVersion: '2021-08-11'
});

Processing car: Mercedes-Benz C-Class
Uploading image: https://car-rental-website-five.vercel.app/_next/image?url=/static2/media/c3Car(17).574834dc.jpg&w=1200q=75
Image uploaded successfully: Image-118/ee8861908165847a0ec8b142f4438abf9-248x100.jpg
Uploading car to Sanity: Mercedes-Benz C-Class
Car uploaded successfully: hXp073h8f8c1b0DX718
Processing car: Porsche 911
Uploading image: https://car-rental-website-five.vercel.app/_next/image?url=/static2/media/c3Car(18).1b97bdcf.jpg&w=1200q=75
Image uploaded successfully: Image-54051dadab66ad7a257275f5c7d561b97d10-264x108.jpg
Uploading car to Sanity: Porsche 911
Car uploaded successfully: I0Nz2DatejhtqepuXSVt
Processing car: Chevrolet Camaro
Uploading image: https://car-rental-website-five.vercel.app/_next/image?url=/static2/media/c3Car(19).547db9f7.jpg&w=1200q=75
Image uploaded successfully: Image-5f87caad292bc2345b579d38ecc3b341741b-288x112.jpg
Uploading car to Sanity: Chevrolet Camaro
Car uploaded successfully: kFwASl65ZU130X0w6Wz
Processing car: Nissan Altima
```

- **Re-importing Data:**

After checking the data, it was re-imported into Sanity CMS. This confirmed that the data migration was successful and everything was working as expected.



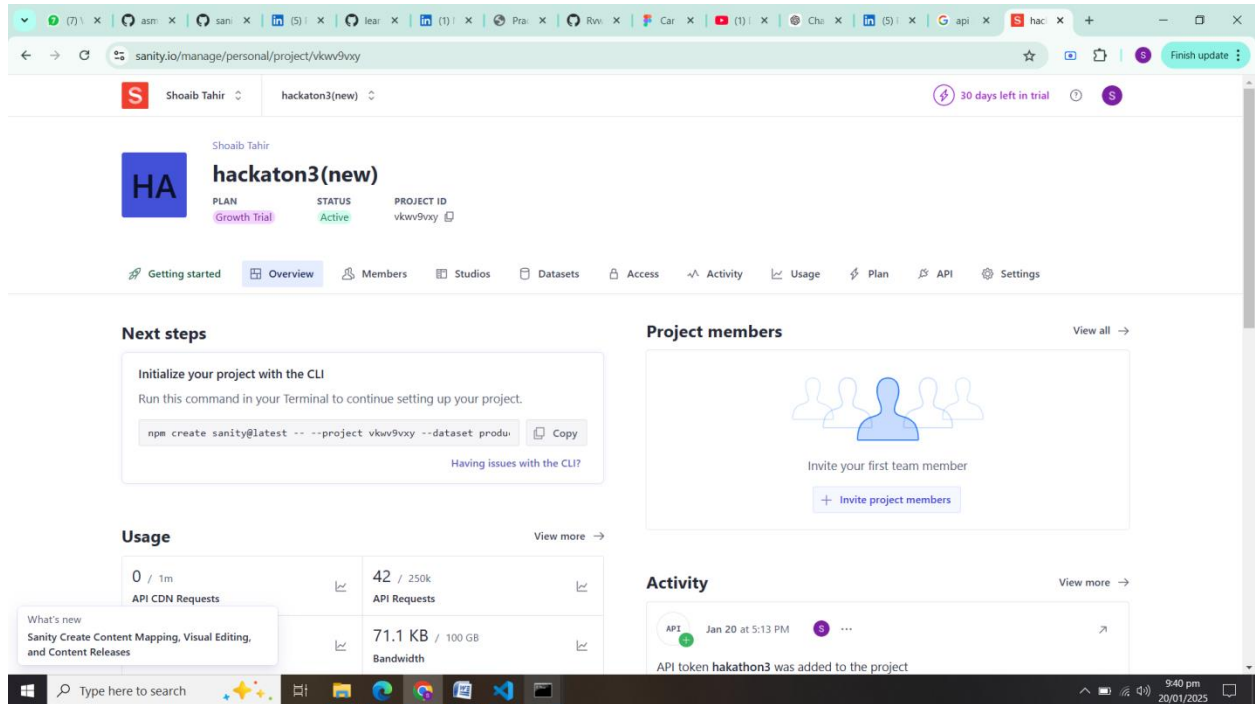
```
✓ compiled /test in 11.3s (3783 modules)
{
  imageUrl: 'https://cdn.sanity.io/images/a4ofbdse/production/bd4b40b087bd3054a95e66e8a0c75191612f1d3-232x72.jpg',
  name: 'Koenigsegg',
  type: 'Sport',
  pricePerDay: '$99.00',
  transmission: 'Manual',
  fuelCapacity: '90L',
  seatingCapacity: '2 People',
  tags: [ 'popular' ]
},
{
  imageUrl: 'https://cdn.sanity.io/images/a4ofbdse/production/db21552aeada561b7291136fd83fe715a02090-204x64.jpg',
  name: 'Nissan GT-R',
  type: 'Sport',
  pricePerDay: '$80.00',
  transmission: 'Manual',
  fuelCapacity: '88L',
  seatingCapacity: '2 People'
},
{
  fuelCapacity: '60L',
  seatingCapacity: '4 seats',
  tags: [ 'recommended' ],
  imageUrl: 'https://cdn.sanity.io/images/a4ofbdse/production/50e929b35137deaf013a61339065948788fc8331-248x100.jpg',
  name: 'Ford Mustang',
  type: 'Gasoline',
  pricePerDay: '$80.00/day',
  transmission: 'Manual'
},
{
  imageUrl: 'https://cdn.sanity.io/images/a4ofbdse/production/46d359bcadf8ea322b6780ca7d387d84b3c76bc8-224x100.jpg',
  name: 'Audi A6',
  type: 'Hybrid',
  pricePerDay: '$120.00/day',
  transmission: 'Manual',
  fuelCapacity: '50L',
  seatingCapacity: '5 seats',
  tags: [ 'recommended' ]
}
```



## 4. Tools Used:

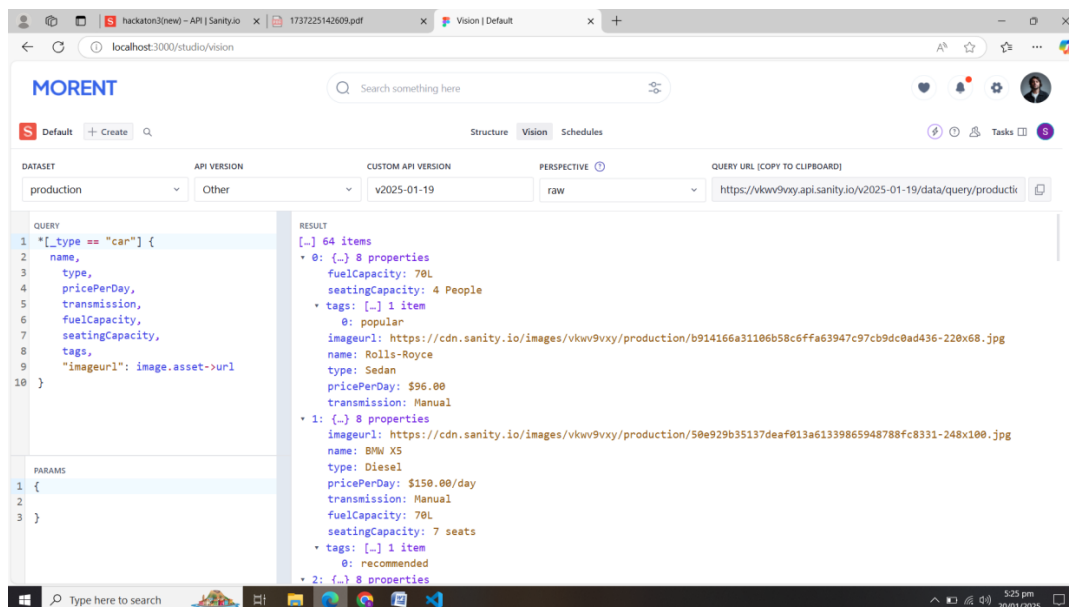
- **Sanity Studio:**

Used to create schemas, manage content, and display car data.



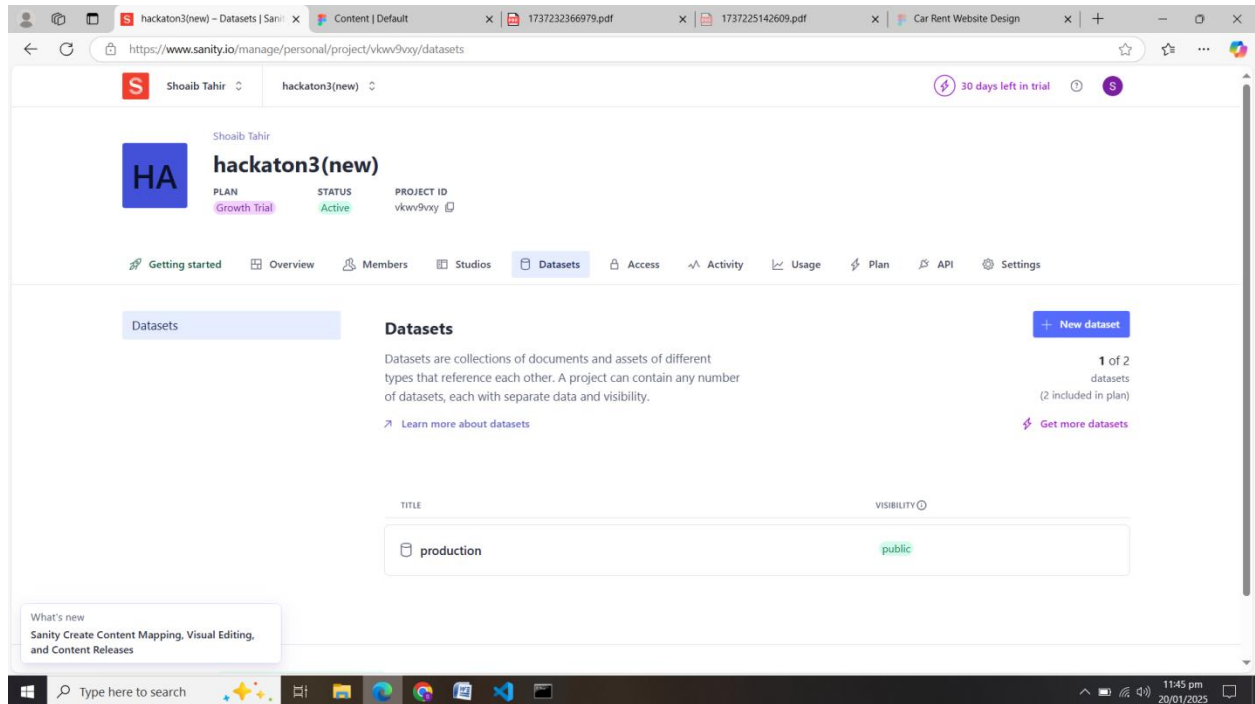
- **Sanity Vision:**

A tool used for testing and debugging GROQ queries to fetch and preview data in Sanity Studio.



- **Sanity Database:**

A cloud-based database used to store and manage structured content, like product data, for the application.



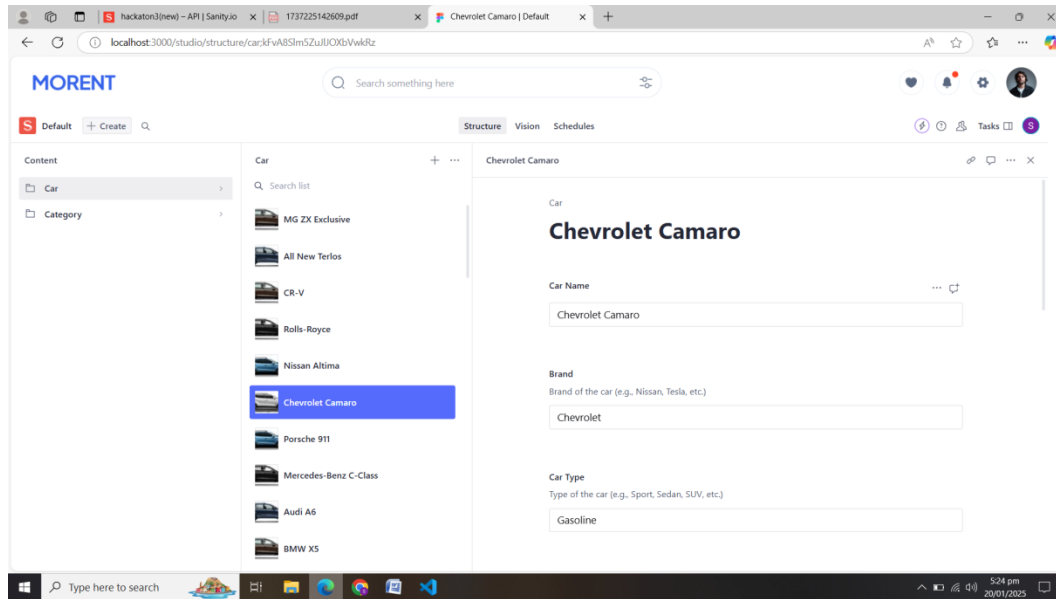
- **Sanity CLI:**

Used for exporting and importing datasets to ensure data is consistent and backed up.

## 5. Screenshots and Frontend Display:

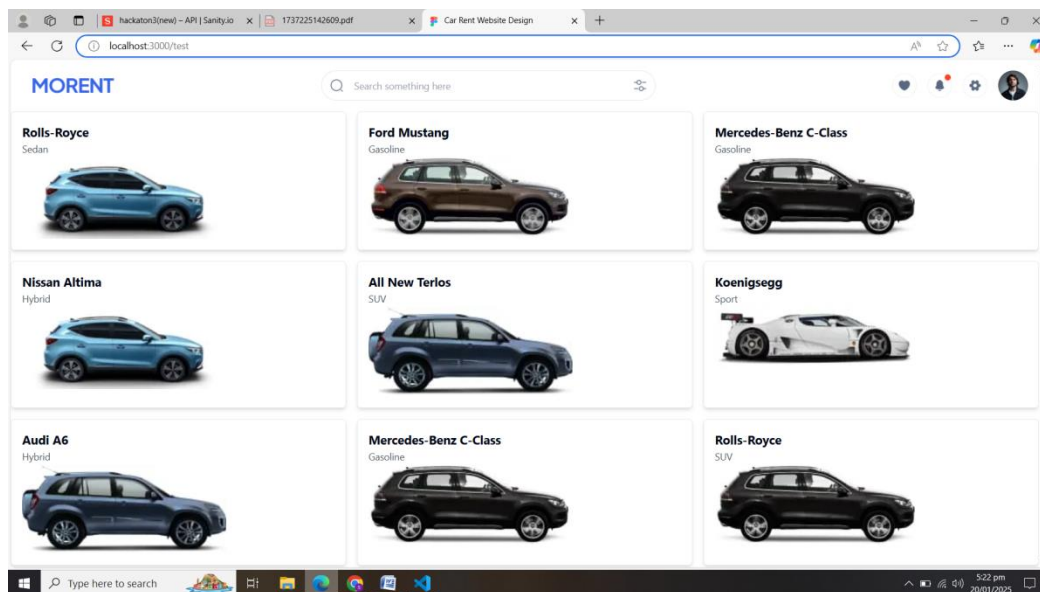
- **Sanity CMS Fields:**

A screenshot showing the filled fields in Sanity Studio, displaying car details like name, brand, type, fuel capacity, price per day, and images.



- **Frontend Display:**

A screenshot showing how the car data is dynamically displayed on the frontend of the rental marketplace.



## Key Steps for Sanity API Integration and Data Migration

### 1. Sanity API Setup:

- Connects to Sanity's API using a dataset and project ID with an API token for security.
- Environment variables (like project ID and dataset) keep sensitive information safe.

### 2. Fetching Data from Sanity:

- Uses GROQ queries to get structured data from Sanity CMS.
- Example: Queries fetch car categories, descriptions, prices, and other details.

### 3. Mapping and Formatting:

- Matches the fetched data with the RentalHub schema.
- Formats records to fit the application's requirements.

### 4. Saving to Database:

- Saves data into the RentalHub database through REST API calls or direct commands.
- Handles errors to log issues without stopping the process.

### 5. Code Highlights:

- Reusability: Functions can be reused for future migrations.
- Efficiency: Bulk data insertion reduces API calls and works faster.

## 6. Conclusion:

The API integration and data migration were successfully completed, improving the efficiency and scalability of the RentalHub project. This integration made it easier to add and update car data in the marketplace, while the migration steps ensured data accuracy and consistency throughout the system. With this setup, the RentalHub project is now more dynamic and easier to manage.