

PENCARIAN INFORMASI DATA PESAWAT MENGGUNAKAN NOMOR REGISTRASI PESAWAT DENGAN MEMANFAATKAN *DATABASE* DAN JSON

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ABSTRACT

Currently, not much of public didn't know about the information of data aircraft, the manufacture and type is sample. The aircraft also has registration number which not same between one aircraft with another aircraft. Information retrival of data aircraft can used registration number with developed in an application with take advantage of database and JSON (JavaScript Object Notation). JSON is a data exchange system that's easily translated in to the language of computer or human. Data exchange these give mean make the distribution application base of web services. Web services is a system that provide service the another system to share resource. Procces of made an application with base of web services must suitable with SOA (Service Oriented Architecture), where SOA is a model representation to up model shape which has distribution. For Implementation SOA, it can use the language of programming PHP (Hypertext Preprocessor). Tested on six aircraft, indicated of airport and airline data can to point out that use of database and JSON can be run well. Decided of internet network is an obtacle to present data.

Keywords : Information of data aircraft, airport, airline, database, JSON, web services, SOA, PHP.

1. Pendahuluan

Untuk mendapatkan informasi yang tepat (sesuai dengan yang dibutuhkan) sangat tergantung dari kualitas data yang membentuk informasi dan proses pengolahan datanya. Hal inilah yang memicu munculnya teknologi *web service*, dimana sebuah sistem menyediakan layanan data kepada sistem lain, sehingga sistem lain dapat berinteraksi dengan sistem tersebut.

Saatini, banyak dari masyarakat umum tidak mengetahui tentang informasi dan data pesawat, misalnya *manufacture*, tipe dan jenisnya bahkan pesawat memiliki nomor registrasi yang tidak sama antar pesawat. Pencarian informasi data pesawat menggunakan nomor registrasi inilah yang akan dikembangkan dalam sebuah aplikasi dengan memanfaatkan *database* dan JSON.

2. Tinjauan Pustaka

Dalam mengembangkan sebuah aplikasi *web service*, dibutuhkan format pertukaran data yang sesuai dengan aplikasi terdistribusi berbasis *Service Oriented Architecture* (SOA). Untuk mengimplementasikan SOA, JSON (*Java Script Object Notation*) adalah format pertukaran data yang dapat digunakan karena lebih ringan dan juga mudah dimengerti oleh bahasa manusia serta komputer.

Pada Jurnal terbitan Universitas Islam Negeri Syarif Hidayatullah Jakarta, Bhakti Destian Wijaya, Fenty E.M.A, dan Andrew Fiade melakukan penelitian dan pembuatan aplikasi dengan memanfaatkan fasilitas *web service* yang berjudul "Implementasi JSON *Parsing* Pada Aplikasi *Mobile E-Commerce* Studi Kasus : CV V3 Tekno Indonesia". Dalam penelitian ini

menghasilkan sebuah aplikasi *mobile e-commerce* pada *smartphone* Android dengan menerapkan skema JSON *parsing* untuk menampilkan data dari *website*.

3. LandasanTeori

3.1. Java Script Object Notation (JSON)

JSON merupakan format pertukaran data yang ringan, mudah dibaca dan ditulis oleh manusia, serta mudah diterjemahkan dan dibuat oleh komputer. JSON dibangun dalam dua struktur, yaitu :

1. Beberapa pasangan dari nilai.
2. Nilai-nilai yang terusunsecara*ordered list*.

3.2. Perhitungan Durasi Terbang Pesawat

Perhitungan durasi terbang dari pesawat bertujuan untuk melihat lamanya terbang dalam beberapa rute. Contoh tampilan *track history* dan perhitungan durasi terbang dapat dilihat pada Tabel 1.

Tabel 1. Contoh Tabel *Track History*
(Sumber :www.flightradar24.com)

Date	From	To	Flight	Flight Time	STD (1)	ATD	STA (02)	Status
14 Des 2015	Batam (BTH)	Palembang (PLM)	OG929	0:54	09 : 30	11 : 04	10 : 30	Landed 01:57
14 Des 2015	Padang (PDG)	Batam (BTH)	OG911	1:41	07 : 55	07 : 55	09 : 00	Landed 09:39
DurasiTerbang = 2 jam : 35 Menit: 0 Detik								

Keterangan :

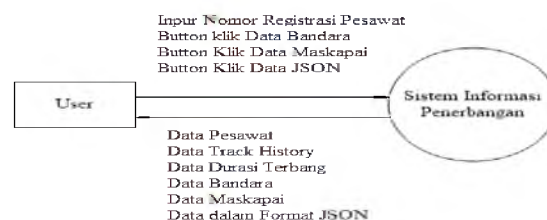
1. STD (1) : *Schedull Time of Departure*, adalah waktu keberangkatan berdasarkan jadwal tetap.
2. ATD : *Actual Time of Departure*, adalah waktu nyata keberangkatan.
3. STA (2) : *Schedull Time of Arrival*, adalah waktu tiba berdasarkan jadwal tetap.

Penjelasan dari Tabel 3.1 adalah sebagai berikut :

1. Dalam satu kali penerbangan durasi terbang dapat dilihat pada kolom *flight time*.
2. *Flight time* dihitung berdasarkan waktu nyata keberangkatan (ATD) dan waktu pada status *landing*.
3. *Flight time* pada penerbangan Batam ke Palembang (54 menit) akan ditambahkan dengan *flight time* pada penerbangan Padang ke Batam (1 jam dan 41 menit).
4. Jadi, durasi terbang pesawat (dua kali penerbangan) adalah 2 jam dan 35 menit.

3.3. Diagram Konteks

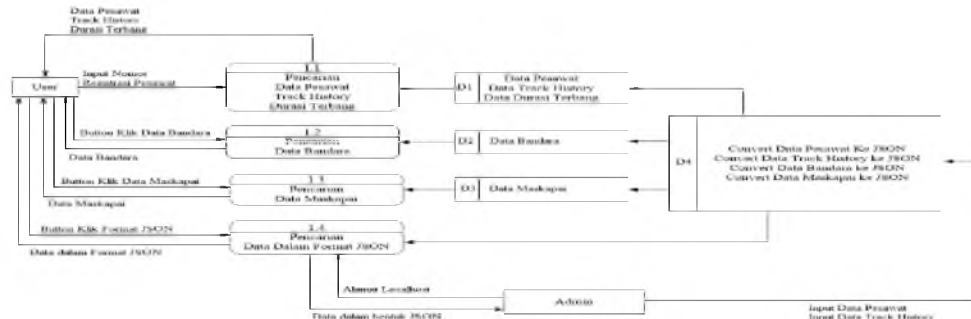
Diagram konteks adalah penggambaran secara keseluruhan daripada sistem yang digunakan dalam penelitian ini dapat dilihat pada gambar 1.



Gambar 1. Diagram Konteks

3.4. Data Flow Diagram (DFD)

DFD adalah teknik untuk menggambarkan *transformasi* data yang dimulai dari *input*, proses dan *output*. Pada Gambar 2 menjelaskan bahwa aplikasi dibangun pada 2 sisi yang berbeda. Yang pertama sisi pengguna/*user* dan yang kedua adalah sisi *server* (Admin).

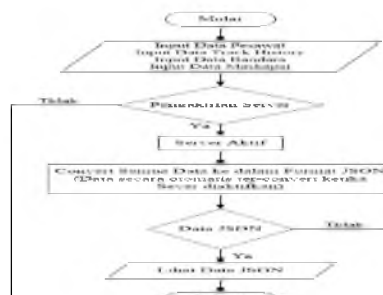


Gambar 2. Data Flow Diagram

3.5. Perancangan Sistem

1. Flowchart Admin

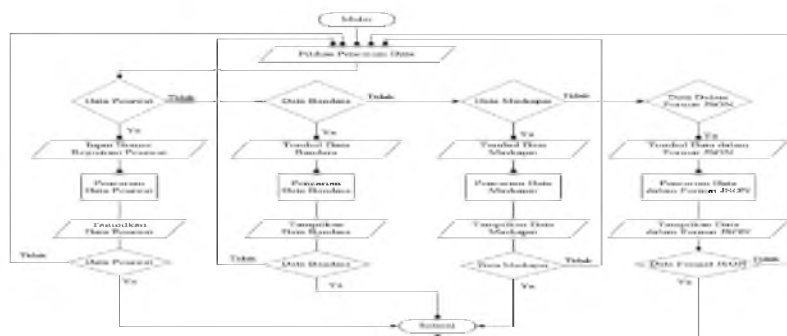
Flowchart admin adalah prosedur yang menjadi acuan pembuatan aplikasi pada sisi admin. Dapat dilihat pada Gambar 3 sistem yang bekerja pada sisi *server*. Di sisi *server*, semua data akan diubah ke dalam format JSON.



Gambar 3. Flowchart di sisi Server

2. Flowchart User

Flowchart pengguna adalah prosedur yang menjadi acuan pembuatan aplikasi pada sisi pengguna. Dapat dilihat pada Gambar 4 adalah sistem yang berjalan pada sisi pengguna.



Gambar 4. Flowchart Pengguna

4. Hasil dan Pembahasan

4.1. Pengujian Aplikasi

Berikut ini akan diuraikan hasil pengujian aplikasi dari sisi *admin* dan sisi pengguna.

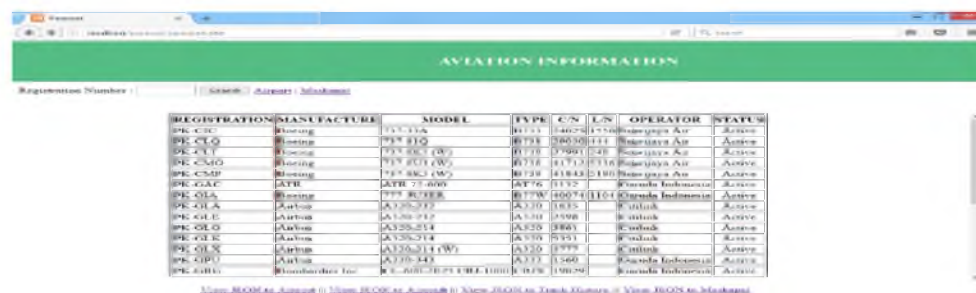
1. Pengujian *Admin* (Lihat Data dalam Format JSON)

Data dalam format JSON dapat langsung dilihat oleh admin dengan mengetikkan perintah pada *browser*. Perintah tersebut adalah :

- Data pesawat : <http://localhost:8888>.
- Data *track history* : <http://localhost:8888/flighthistory>.
- Data bandara : <http://localhost:8888/airport>.
- Data maskapai : <http://localhost:8888/alloperated>.
- Data *track history* berdasarkan nomor registrasi pesawat: <http://localhost:8888/ambiliadwal/PK-LBK> (ketika akan memunculkan data *track history* berdasarkan nomor registrasipesawat PK-LBK).

2. Pengujian *User* (Pengguna)

Berikut merupakan tampilan awal ketika aplikasi pencarian data pesawat dijalankan Gambar 5.



REGISTRATION	MANUFACTURE	MODEL	TYPE	C/N	L/N	OPERATOR	STATUS
PK-CRC	Boeing	737-33A	B737	14672	1554	Garuda Indonesia	Active
PK-CLG	Boeing	737-33Q	B737	28650	1114	Garuda Indonesia	Active
PK-CLT	Boeing	737-33Q (W)	B737	27901	1248	Garuda Indonesia	Active
PK-CMG	Boeing	737-33Q (W)	B737	11712	1318	Garuda Indonesia	Active
PK-CMP	Boeing	737-33Q (W)	B737	11843	1100	Garuda Indonesia	Active
PK-CAC	ATR	72-600	ATR72	11132		Garuda Indonesia	Active
PK-OLA	Boeing	737-330ER	B73W	40074	1104	Garuda Indonesia	Active
PK-OLA	Airbus	A320XLR	A320	18135		Garuda Indonesia	Active
PK-OLE	Airbus	A320XLR	A320	18136		Garuda Indonesia	Active
PK-OLE	Airbus	A320XLR	A320	18137		Garuda Indonesia	Active
PK-OLE	Airbus	A320XLR (W)	A320	18138		Garuda Indonesia	Active
PK-CLP	Airbus	A320XLR	A320	18139		Garuda Indonesia	Active
PK-CLB	Boeing	737-33Q (W)	B737	18140		Garuda Indonesia	Active

Gambar 5. Tampilan Awal Aplikasi

a. Pencarian Pesawat dengan Nomor Registrasi PK-CLT

Pada pengujian awal, dilakukan dengan memasukkan nomor registrasi pesawat PK-CLT.



DATE	FROM	TO	FLIGHT	FLIGHT TIME	IN SECOND	STD	ATD	STA	STATUS
21-Apr-2016	Bandara Lamping (TGO)	Bandara Lamping (TGO)	6368	00:11:00	1160	7:01 AM	7:11 AM	7:46 AM	landed 9:14 AM
21-Apr-2016	Bandara Lamping (TGO)	Bandara Lamping (TGO)	6368	00:11:00	1160	7:01 AM	7:11 AM	7:46 AM	landed 9:14 AM
20-Apr-2016	Bandara Lamping (TGO)	Bandara Lamping (TGO)	6368	00:11:00	1160	7:01 AM	7:11 AM	7:46 AM	landed 9:14 AM
20-Apr-2016	Bandara Lamping (TGO)	Bandara Lamping (TGO)	6368	00:11:00	1160	7:01 AM	7:11 AM	7:46 AM	landed 9:14 AM
20-Apr-2016	Bandara Lamping (TGO)	Bandara Lamping (TGO)	6368	00:11:00	1160	7:01 AM	7:11 AM	7:46 AM	landed 9:14 AM

DURASI TERBANG = 7 Jam - 43 Menit - 0 Detik

Account Data

REGISTRATION	MANUFACTURE	MODEL	TYPE	C/N	L/N	OPERATOR	STATUS
PK-CLT	Boeing	737-33Q (W)	B737	27901	1248	Garuda Indonesia	Active

[Back](#)

Gambar 6. Informasi Pesawat PK-CLT

Pada Gambar 7 adalah data *track history* dari pesawat PK-CLT dalam format JSON.

```

1 [{"id_jadwal":11,"date":"21-Apr-2016","from":"Bandar Lampung (TKG) ","to":"Jakarta (CGK) ",
2 "flight":"SJ399 ","flight_time":"00:43:00","std":"8:10 AM","atd":"8:23 AM","sta":"9:00 AM",
3 "status":"Landed 9:06 AM ","registration":"PK-CLT"},
4 {"id_jadwal":12,"date":"21-Apr-2016","from":"Jakarta (CGK) ","to":"Bandar Lampung (TKG) ",
5 "flight":"SJ388 ","flight_time":"00:23:00","std":"7:01 AM","atd":"7:18 AM","sta":"7:40 AM",
6 "status":"Landed 7:42 AM ","registration":"PK-CLT"},
7 {"id_jadwal":13,"date":"20-Apr-2016","from":"Tanjung Pandan (TJQ) ","to":"Jakarta (CGK) ",
8 "flight":"SJ53 ","flight_time":"00:55:00","std":"4:20 PM","atd":"4:30 PM","sta":"5:25 PM",
9 "status":"Landed 5:25 PM ","registration":"PK-CLT"},
10 {"id_jadwal":14,"date":"20-Apr-2016","from":"Jakarta (CGK) ","to":"Tanjung Pandan (TJQ) ",
11 "flight":"SJ52 ","flight_time":"00:41:00","std":"2:50 PM","atd":"3:09 PM","sta":"3:50 PM",
12 "status":"Landed 3:51 PM ","registration":"PK-CLT"},
13 {"id_jadwal":15,"date":"20-Apr-2016","from":"Malang (MLG) ","to":"Jakarta (CGK) ",
14 "flight":"SJ247 ","flight_time":"01:11:00","std":"12:45 PM","atd":"12:56 PM","sta":"2:05 PM",
15 "status":"Landed 2:08 PM ","registration":"PK-CLT"}]

```

Gambar 7. Data *Track History* Pesawat PK-CLT dalam format JSON

b. Pencarian Pesawat dengan Nomor Registrasi PK-GLX

Pada pengujian ke-dua, dilakukan dengan menginputkan nomor registrasi pesawat PK-GLX.

The screenshot shows a web application titled "AVIATION INFORMATION". It displays the "Track History" for aircraft "PK-GLX". The history table lists several flights from April 2016, including routes to Medan (KNO) and Jakarta (CGK). Below the history, the "Aircraft Data" section shows details for PK-GLX, including its manufacturer (Airbus), model (A320-111X), type (Jet), and operator (Garuda Indonesia).

DATE	FROM	TO	FLIGHT	FLIGHT TIME	IN	SECOND	STD	ATD	STA	STATUS
23 Apr 2016	Jakarta (CGK)	Batam (BTH)	Q9842	01:21:00	1400		5:05 AM	5:48 AM	6:45 AM	Landed 7:10 AM
23 Apr 2016	Batam (BTH)	Jakarta (CGK)	Q9841	01:30:00	1400		1:14 AM	1:48 AM	2:50 AM	Landed 3:08 AM
23 Apr 2016	Jakarta (CGK)	Batam (BTH)	Q9840	01:18:00	1400		11:38 PM	11:39 PM	12:03 AM	Landed 12:39 AM
23 Apr 2016	Medan (KNO)	Jakarta (CGK)	Q9835	02:03:00	1400		11:23 PM	12:31 PM	13:40 PM	Landed 1:29 PM
23 Apr 2016	Jakarta (CGK)	Medan (KNO)	Q9834	01:11:00	1400		12:40 AM	11:31 AM	12:55 PM	Landed 1:29 PM

REGISTRATION	MANUFACTURE	MODEL	TYPE	C/N	I/N	OPERATOR	STATUS
PK-GLX	Airbus	A320-111X	Jet	1400		Garuda Indonesia	Active

Gambar 8. Informasi Pesawat PK-GLX

Pada Gambar 9 adalah data *track history* dari pesawat PK-GLX dalam format JSON.

```

1 [{"id_jadwal":71,"date":"23-Apr-2016","from":"Jakarta (CGK) ","to":"Batam (BTH) ",
2 "flight":"Q9842 ","flight_time":"01:21:00","std":"5:05 AM","atd":"5:48 AM","sta":"6:45 AM",
3 "status":"Landed 7:10 AM ","registration":"PK-GLX"},
4 {"id_jadwal":72,"date":"23-Apr-2016","from":"Batam (BTH) ","to":"Jakarta (CGK) ",
5 "flight":"Q9841 ","flight_time":"01:20:00","std":"1:15 AM","atd":"1:48 AM","sta":"2:50 AM",
6 "status":"Landed 3:08 AM ","registration":"PK-GLX"},
7 {"id_jadwal":73,"date":"22-Apr-2016","from":"Jakarta (CGK) ","to":"Batam (BTH) ",
8 "flight":"Q9840 ","flight_time":"01:19:00","std":"11:20 PM","atd":"11:37 PM","sta":"12:03 AM",
9 "status":"Landed 12:39 AM ","registration":"PK-GLX"},
10 {"id_jadwal":74,"date":"22-Apr-2016","from":"Medan (KNO) ","to":"Jakarta (CGK) ",
11 "flight":"Q9835 ","flight_time":"02:03:00","std":"1:25 PM","atd":"2:21 PM","sta":"3:40 PM",
12 "status":"Landed 4:24 PM ","registration":"PK-GLX"},
13 {"id_jadwal":75,"date":"22-Apr-2016","from":"Jakarta (CGK) ","to":"Medan (KNO) ",
14 "flight":"Q9834 ","flight_time":"01:53:00","std":"10:40 AM","atd":"11:35 AM","sta":"12:55 PM",
15 "status":"Landed 1:29 PM ","registration":"PK-GLX"}]

```

Gambar 9. Data *Track History* Pesawat PK-GLX dalam format JSON

c. Pencarian Pesawat dengan Nomor Registrasi PK-LBG

Pada pengujian ke-tiga, dilakukan dengan menginputkan nomor registrasi pesawat PK-LBG.

The screenshot shows a web application titled "AVIATION INFORMATION". It displays the "Track History" for aircraft "PK-LBG". The history table lists several flights from April 2016, including routes to Balikpapan (BPN), Pangkajene (PGJ), and Jakarta (CGK). Below the history, the "Aircraft Data" section shows details for PK-LBG, including its manufacturer (Boeing), model (737-500), type (Jet), and operator (Garuda Indonesia).

DATE	FROM	TO	FLIGHT	FLIGHT TIME	IN	SECOND	STD	ATD	STA	STATUS
23 Apr 2016	Jakarta (CGK)	Balikpapan (BPN)	B6513	01:19:00	1400		3:55 AM	4:02 AM	6:05 AM	Landed 5:41 AM
21-Apr-2016	Jakarta (CGK)	Pangkajene (PGJ)	B6519	03:18:00	1400		6:10 AM	6:43 AM	8:40 AM	Landed 9:42 AM
20-Apr-2016	Pangkajene (PGJ)	Jakarta (CGK)	B6518	05:18:00	1400		11:45 PM	11:55 PM	5:15 AM	Landed 5:11 AM
20-Apr-2016	Jakarta (CGK)	Jayapura (DJF)	B6518	04:45:00	1400		4:50 PM	5:14 PM	10:55 PM	Landed 10:00 PM
20-Apr-2016	Yogyakarta (YUD)	Jakarta (CGK)	B6517	01:11:00	1400		12:50 PM	1:09 PM	2:20 PM	Landed 2:20 PM

REGISTRATION	MANUFACTURE	MODEL	TYPE	C/N	I/N	OPERATOR	STATUS
PK-LBG	Boeing	737-500ER (W)	Jet	3666	441	Garuda Indonesia	Active

Gambar 10. Informasi Pesawat PK-LBG

Pada Gambar 11 adalah data *track history* dari pesawat PK-LBG dalam format JSON.

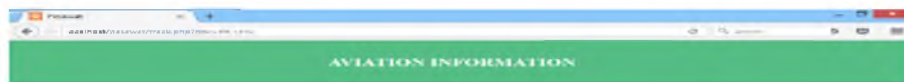
```

1 [{"id_jadwal":81,"date":"22-Apr-2016","from":"Jakarta (CGK) ","to":"Balikpapan (BPN) ",
2 "flight":"ID6252 ","flight_time":"01:39:00","std":"3:55 AM","atd":"4:02 AM","sta":"6:05 AM",
3 "status":"Landed 5:41 AM ","registration":"PK-LBG"},
4 [{"id_jadwal":82,"date":"21-Apr-2016","from":"Jakarta (CGK) ","to":"Ambon (AMQ) ",
5 "flight":"ID6178 ","flight_time":"02:59:00","std":"6:10 AM","atd":"6:43 AM","sta":"9:40 AM",
6 "status":"Landed 9:42 AM ","registration":"PK-LBG"},
7 [{"id_jadwal":83,"date":"20-Apr-2016","from":"Jayapura (DJJ) ","to":"Jakarta (CGK) ",
8 "flight":"ID6181 ","flight_time":"05:16:00","std":"11:45 PM","atd":"11:55 PM","sta":"5:15 AM",
9 "status":"Landed 5:11 AM ","registration":"PK-LBG"},
10 [{"id_jadwal":84,"date":"20-Apr-2016","from":"Jakarta (CGK) ","to":"Jayapura (DJJ) ",
11 "flight":"ID6180 ","flight_time":"04:45:00","std":"4:55 PM","atd":"5:14 PM","sta":"10:55 PM",
12 "status":"Landed 10:00 PM ","registration":"PK-LBG"},
13 [{"id_jadwal":85,"date":"20-Apr-2016","from":"Surabaya (SUB) ","to":"Jakarta (CGK) ",
14 "flight":"ID6587 ","flight_time":"01:11:00","std":"12:50 PM","atd":"1:09 PM","sta":"2:20 PM",
15 "status":"Landed 2:20 PM ","registration":"PK-LBG"}]

```

Gambar 11. Data *Track History* Pesawat PK-LBG dalam format JSON

- d. Pencarian Pesawat dengan Nomor Registrasi PK-LHG
 Pada pengujian ke-empat, dilakukan dengan menginputkan nomor registrasi pesawat PK-LHG.



Track History - PK-LHG

DATE	FROM	TO	FLIGHT	FLIGHT TIME IN SECOND	STD	ATD	STA	STATUS
27-Mar-2016	Medan (KNO)	Jakarta (CGK)	JT399	01:49:00	05:40	06:20 AM	06:45 AM	Landed 11:31 AM
27-Mar-2016	Jakarta (CGK)	Medan (KNO)	JT398	01:43:00	01:50	02:20 AM	02:40 AM	Landed 03:00 AM
27-Mar-2016	Dempasar (DPS)	Jakarta (CGK)	JT31	01:22:00	09:20	10:30 AM	10:55 AM	Landed 11:55 AM
26-Mar-2016	Jakarta (CGK)	Dempasar (DPS)	JT30	01:19:00	07:40	11:20 PM	11:47 PM	Landed 11:07 AM
25-Mar-2016	Medan (KNO)	Jakarta (CGK)	JT399	01:52:00	07:20	08:20 AM	08:45 AM	Landed 11:36 AM

DURASI TERBANYA = 8 Jam - 5 Menit - 0 Detik

Aviation Data

REGISTRATION	MANUFACTURE	MODEL	TYPE	C/N	L/N	OPERATOR	STATUS
PK-LHG	Boeing	747-412	B744	1498	761	Garuda Air	Active

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Gambar 12. Informasi Pesawat PK-LHG

Pada Gambar 13 adalah data *track history* dari pesawat PK-LHG dalam format JSON.

```

1 [{"id_jadwal":111,"date":"27-Mar-2016","from":"Medan (KNO) ","to":"Jakarta (CGK) ",
2 "flight":"JT399 ","flight_time":"01:49:00","std":"5:40 AM","atd":"6:20 AM","sta":"10:45 AM",
3 "status":"Landed 11:31 AM ","registration":"PK-LHG"},
4 [{"id_jadwal":112,"date":"27-Mar-2016","from":"Jakarta (CGK) ","to":"Medan (KNO) ",
5 "flight":"JT398 ","flight_time":"01:43:00","std":"5:20 AM","atd":"6:19 AM","sta":"7:40 AM",
6 "status":"Landed 03:02 AM ","registration":"PK-LHG"},
7 [{"id_jadwal":113,"date":"27-Mar-2016","from":"Dempasar (DPS) ","to":"Jakarta (CGK) ",
8 "flight":"JT31 ","flight_time":"01:22:00","std":"1:50 AM","atd":"2:32 AM","sta":"3:45 AM",
9 "status":"Landed 3:55 AM ","registration":"PK-LHG"},
10 [{"id_jadwal":114,"date":"26-Mar-2016","from":"Jakarta (CGK) ","to":"Dempasar (DPS) ",
11 "flight":"JT30 ","flight_time":"01:19:00","std":"11:20 PM","atd":"11:47 PM","sta":"1:10 AM",
12 "status":"Landed 11:07 AM ","registration":"PK-LHG"},
13 [{"id_jadwal":115,"date":"25-Mar-2016","from":"Medan (KNO) ","to":"Jakarta (CGK) ",
14 "flight":"JT399 ","flight_time":"01:52:00","std":"8:20 AM","atd":"9:43 AM","sta":"10:45 AM",
15 "status":"Landed 11:36 AM ","registration":"PK-LHG"}]

```

Gambar 13. Data *Track History* Pesawat PK-LHG dalam format JSON

- e. Pencarian Pesawat dengan Nomor Registrasi PK-GAC
 Pada pengujian ke-lima, dilakukan dengan menginputkan nomor registrasi pesawat PK-GAC.



Track History - PK-GAC

DATE	FROM	TO	FLIGHT	FLIGHT TIME IN SECOND	STD	ATD	STA	STATUS
27-Apr-2016	Palmudak (PDK)	Surabaya (SUB)	BJA7973	00:19:00	1740	17:31 AM	17:50 AM	Landed 17:56 AM
26-Apr-2016	Palmudak (PDK)	Palmudak (PDK)	BJA7973	01:29:00	1400	14:00 PM	15:29 PM	Landed 14:00 AM
26-Apr-2016	Palmudak (PDK)	Palmudak (PDK)	BJA7973	00:13:00	1130	10:00 PM	10:13 PM	Landed 10:14 AM
26-Apr-2016	Palmudak (PDK)	Balikpapan (BPN)	BJA7973	00:18:00	1340	10:30 AM	10:48 AM	Landed 11:14 AM
26-Apr-2016	Palmudak (PDK)	Palmudak (PDK)	BJA7973	01:13:00	1400	11:20 AM	12:33 AM	Landed 01:42 AM

DURASI TERBANYA = 2 Jam - 5 Menit - 0 Detik

Aviation Data

REGISTRATION	MANUFACTURE	MODEL	TYPE	C/N	L/N	OPERATOR	STATUS
PK-GAC	ATR	72-600	AT76	1117		Garuda Indonesia	Active

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Gambar 14. Informasi Pesawat PK-GAC

Pada Gambar 15 adalah data *track history* dari pesawat PK-GAC dalam format JSON.

```
1 [{"id_jadwal":26,"date":"22-Apr-2016","from":"Pontianak (PNK) ","to":"Ketapang (KTG) ","
2 "flight":"GA7532 ","flight_time":"00:29:00","std":"1:25 AM","atd":"1:26 AM","sta":"2:06 AM",
3 "status":"Landed 1:56 AM ","registration":"PK-GAC"},
4 {"id_jadwal":27,"date":"20-Apr-2016","from":"Palangkaraya (PKY) ","to":"Pontianak (PNK) ",
5 "flight":"GA7522 ","flight_time":"01:25:00","std":"11:40 PM","atd":"11:35 PM","sta":"1:10 AM",
6 "status":"Landed 1:00 AM ","registration":"PK-GAC"},
7 {"id_jadwal":28,"date":"20-Apr-2016","from":"Balikpapan (BPN) ","to":"Palangkaraya (PKY) ",
8 "flight":"GA7522 ","flight_time":"00:52:00","std":"10:00 PM","atd":"10:04 PM","sta":"11:10 PM",
9 "status":"Landed 10:56 PM ","registration":"PK-GAC"},
10 {"id_jadwal":29,"date":"20-Apr-2016","from":"Palangkaraya (PKY) ","to":"Balikpapan (BPN) ",
11 "flight":"GA7523 ","flight_time":"00:56:00","std":"10:00 AM","atd":"10:22 AM","sta":"11:10 AM",
12 "status":"Landed 11:18 AM ","registration":"PK-GAC"},
13 {"id_jadwal":30,"date":"20-Apr-2016","from":"Pontianak (PNK) ","to":"Palangkaraya (PKY) ",
14 "flight":"GA7523 ","flight_time":"01:23:00","std":"7:50 AM","atd":"8:19 AM","sta":"9:30 AM",
15 "status":"Landed 9:42 AM ","registration":"PK-GAC"}]
```

Gambar 15. Data *Track History* Pesawat PK-GAC dalam format JSON

DATE	FROM	TO	FLIGHT	FLIGHT TIME	IN SECOND	STD	ATD	STA	STATUS
20-Apr-2016	Yogyakarta (JOG)	Balikpapan (BPN)	GA665	01:01:00	3660	07:50 AM	07:58 AM	09:40 AM	Landed 9:39 AM
20-Apr-2016	Yogyakarta (JOG)	Balikpapan (BPN)	GA664	01:36:00	5160	05:20 AM	05:27 AM	07:10 AM	Landed 6:53 AM
20-Apr-2016	Yogyakarta (JOG)	Balikpapan (BPN)	GA664	01:23:00	4980	07:50 AM	08:12 AM	09:40 AM	Landed 9:36 AM
20-Apr-2016	Balikpapan (BPN)	Yogyakarta (JOG)	GA664	01:44:00	6740	05:20 AM	05:24 AM	07:10 AM	Landed 6:53 AM
17-Apr-2016	Yogyakarta (JOG)	Balikpapan (BPN)	GA695	01:28:00	5280	01:45 AM	02:03 AM	03:40 AM	Landed 3:31 AM

DURASI TERBANG = 7 Jam 25menit 0 Detik

REGISTRATION	MANUFACTURE	MODEL	TYPE	C/N	L/W	OPERATOR	STATUS
PK-GRG	Boeing	737-400	737-400	1100	30.0	Garuda Indonesia	Active

Track

Gambar 16. Informasi Pesawat PK-GRG

- f. Pencarian Pesawat dengan Nomor Registrasi PK-GRG
Pada pengujian ke-enam, dilakukan dengan menginputkan nomor registrasi pesawat PK-GRG.

Pada Gambar 17 adalah data *track history* dari pesawat PK-GRG dalam format JSON.

```
1 [{"id_jadwal":41,"date":"24-Apr-2016","from":"Yogyakarta (JOG) ","to":"Balikpapan (BPN) ",
2 "flight":"GA665 ","flight_time":"01:01:00","std":"7:50 AM","atd":"7:58 AM","sta":"9:40 AM",
3 "status":"Landed 8:59 AM ","registration":"PK-GRG"},
4 {"id_jadwal":42,"date":"24-Apr-2016","from":"Balikpapan (BPN) ","to":"Yogyakarta (JOG) ",
5 "flight":"GA664 ","flight_time":"01:26:00","std":"5:20 AM","atd":"5:27 AM","sta":"7:10 AM",
6 "status":"Landed 6:53 AM ","registration":"PK-GRG"},
7 {"id_jadwal":43,"date":"20-Apr-2016","from":"Yogyakarta (JOG) ","to":"Balikpapan (BPN) ",
8 "flight":"GA665 ","flight_time":"01:23:00","std":"7:50 AM","atd":"8:12 AM","sta":"9:40 AM",
9 "status":"Landed 9:36 AM ","registration":"PK-GRG"},
10 {"id_jadwal":44,"date":"20-Apr-2016","from":"Balikpapan (BPN) ","to":"Yogyakarta (JOG) ",
11 "flight":"GA664 ","flight_time":"01:44:00","std":"5:20 AM","atd":"5:24 AM","sta":"7:10 AM",
12 "status":"Landed 7:08 AM ","registration":"PK-GRG"},
13 {"id_jadwal":45,"date":"17-Apr-2016","from":"Yogyakarta (JOG) ","to":"Makassar (UEG) ",
14 "flight":"GA695 ","flight_time":"01:28:00","std":"1:45 AM","atd":"2:03 AM","sta":"3:40 AM",
15 "status":"Landed 3:31 AM ","registration":"PK-GRG"}]
```

Gambar 17. Data *Track History* Pesawat PK-GRG dalam format JSON

- g. Uji Coba Menampilkan Data Bandara
Pengujian selanjutnya adalah menampilkan data bandara yang ada di Indonesia.

AIRPORT	IATA	ICAO	PROVINSE	LONGITUDE	LATITUDE	ELEVATION	CATEGORY	OPERATOR
Admoringgo	WV	WADI	DI Yogyakarta	110.213324 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I
Banungserai	WV	WADI	DI Yogyakarta	110.340479 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I
Batu	WV	WADI	DI Yogyakarta	110.340479 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I
David P. O'Connell	WV	WADI	DI Yogyakarta	110.340479 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I
Depati Amir	WV	WADI	DI Yogyakarta	110.340479 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I
Habibie	WV	WADI	DI Yogyakarta	110.340479 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I
Harau	WV	WADI	DI Yogyakarta	110.340479 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I
Indragiri	WV	WADI	DI Yogyakarta	110.340479 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I
Kualanaram	WV	WADI	DI Yogyakarta	110.340479 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I
Ngurah Rai	WV	WADI	DI Yogyakarta	110.340479 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I
Panji Rani	WV	WADI	DI Yogyakarta	110.340479 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I
Pontianak	WV	WADI	DI Yogyakarta	110.340479 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I
Samarinda	WV	WADI	DI Yogyakarta	110.340479 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I
Selaparang	WV	WADI	DI Yogyakarta	110.340479 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I
Sibolga	WV	WADI	DI Yogyakarta	110.340479 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I
Sukarno	WV	WADI	DI Yogyakarta	110.340479 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I
Sultan Hassanudin	WV	WADI	DI Yogyakarta	110.340479 110.415159	7.782351 74.473253	1160 m	Domestic Airport	PT Angkasa Pura I

Gambar 4.17. Informasi Bandara

- h. Uji Coba Menampilkan Data Maskapai
Pengujian selanjutnya adalah menampilkan data maskapai yang beroperasi di Indonesia.



ICAO	IATA	CALL SIGN	START OPERATION	TOTAL	MOTO	OFFICE	STATUS
BTK	ID	Barak	03-Mev-2013	36 Aircraft	Journey Begins	Jakarta, Indonesia	Active
CTV	QG	Super Green	30-July-2012	43 Aircraft	Better Fly Citilink	Jakarta, Indonesia	Active
GIA	GA	Indonesia	26-January-1949	154 Aircraft	The Airline of Indonesia	Jakarta, Indonesia	Active
LNI	JT	Lion Inter	30-Juni-2000	117 Aircraft	We Make People Fly	Jakarta, Indonesia	Active
SJY	SJ	Sriwijaya	10-November-2003	39 Aircraft	Your Flying Partner	Jakarta, Indonesia	Active

[Back](#)

Gambar 4.18. Maskapai

5. Kesimpulan dan Saran

5.1. Kesimpulan

Berdasarkan hasil dan pembahasan, maka dapat disimpulkan bahwa :

1. Aplikasi pencarian data pesawat dibangun pada sisi *server* dan pengguna.
2. Pada sisi *server*, dapat mengubah data *track history* yang terdapat pada *database* menjadi format JSON.
3. Dapat menyajikan informasi data pesawat, *track history* dan durasi terbang dari pesawat dan juga dapat menyajikan informasi data bandara dan maskapai yang terdapat di Indonesia.

5.2 Saran

Berdasarkan kesimpulan, maka didapatkan saran sebagai pengembangan selanjutnya adalah dengan menghubungkan aplikasi ke dalam dengan sistem Google Maps sehingga dapat menampilkan titik koordinat dari pesawat yang dicari maupun bandara.

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