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INTRODUCTION





Vaccine Management System is the system that could provide accurate information of Covid-19 vaccine. In this project, we would like to develop a database management system for vaccine call MyVax which is a short form for Malaysia vaccine. MyVax is an application developed to assist Malaysians in the process of getting their vaccinations.

Scope:

System scope: 1. Provide online registration for the users.

2. Provide vaccine certificate.

User scope: 1. Create an account and log in to the system.

2. Make registration for the vaccines.

CASE STUDY





MySejahtera



MySejahtera is an application developed by the Government of Malaysia to assist in monitoring Covid-19 outbreak in the country by empowering users to assess their health risk against Covid-19.

5 entities: Patient, Appointment, Vaccine, Certificate, Center



Selangkah VAX



Main function of this application same with MySejahtera but has more use in term of vaccine registration compare to MySejahtera.

10 entities: Patient, Appointment, Vaccine, Certificate, Center, Company, Doctor, Nurse, Volunteer, Police



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ATTRIBUTES & PRIMARY KEY



ENTITY	ATTRIBUTES	PRIMARY KEY
Patient	p_ID, p_Name, phone_No, p_DOB, p_Address, p_Age	p_ID
Appointment	p_ID, ppv_ID, app_Date, slot	p_ID
Vaccine	vac_No, p_ID, vac_Type, batch_No	vac_No
Company	c_ID, p_ID, c_Name, p_Name, c_Address, office_No	p_ID
Certificate	batch_No, p_ID, ppv_ID, vac_Type, app_Date, vac_Status	batch_No
Center	ppv_ID, p_ID, ppv_Name, app_Date	p_ID
Doctor	d_ID, ppv_ID, staff_Name, phone_No, hospital_Name	d_ID
Nurse	n_ID, ppv_ID, staff_Name, phone_No, hospital_Name	n_ID
Volunteer	v_ID, ppv_ID, staff_Name, phone_No, home_Address	v_ID
Police	po_ID, ppv_ID, staff_Name, phone_No, station_Name	po_ID

BUSINESS RULES & RELATIONSHIP

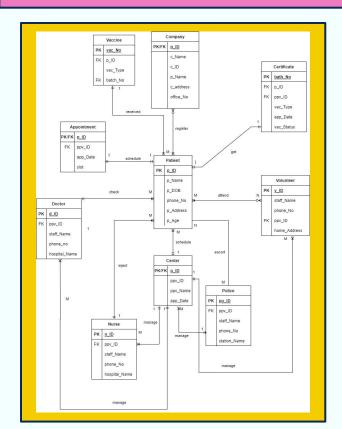


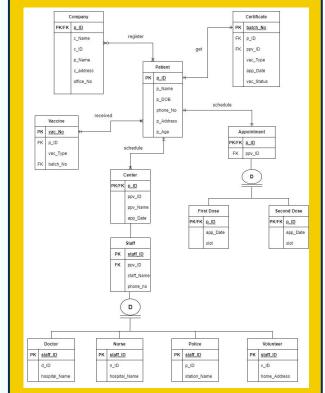
ENTITY	RELATIONSHIP	ENTITY	BUSINESS RULES
	M:1	Doctor	 One center may be managed by one or many doctors. One doctor may manage one and only one center at one time.
Center	M:1	Police	 One center may be guarded by one and or many police officers. One police officer may guard one and only one center at one time.
	M:1	Nurse	 One center may be managed by one or many nurses. One nurse may manage one and only one center at one time.
	M:1	Volunteer	 One center may be attended by one or many volunteer staff. One volunteer staff may attend one and only one center at one time.

ENTITY	RELATIONSHIP	ENTITY	BUSINESS RULES
	1:1	Appointment	 One patient may schedule for one and only one appointment. One appointment is scheduled for one and only one patient.
	M:1	Vaccine	 One patient may receive one and only one type of vaccine. One type of vaccine may be taken by one or many patients.
-	1:M	Center	 One patient can be scheduled to one and only one center only. One center can have many patients at one time.
Patient	M:N	Company	 One patient can be registered for a vaccine by one company or none. One company can register one or many patients to get vaccines.
- Patient	1:1	Certificate	 One patient may get one and only one certificate. One certificate may be given to one and only one patient.
	1:M	Doctor	 One patient can be checked by one and only one doctor only. One doctor can check many patients.
	M:N	Police	 One patient may be escorted by one or many police officers at one time. One police officer may escort many or none patients.
	1:M	Nurse	 One patient can be injected for the vaccine by one and only one nurse. One nurse can inject many patients.
	M:N	Volunteers	 One patient can be attended by one or many volunteer staff at one time. One volunteer staff may attend for one or none patients.

ERD & EERD











NORMALIZATION



<u>1NF</u>

Patients (p_ID, c_ID, batch_No, vac_No, v_ID, ppv_ID, p_Name, n_ID, po_ID, phone_No, p_Address,p_Age, vac_Type, app_Date, slot, ppv_Name, home_Address, vac_Type, vac_Status,)

<u>2NF</u>

Volunteer (v ID, ppv ID, p ID, staff Name, home Address)

Polices (po_ID, ppv_ID, staff_Name, phone_No, station_Name, p_ID, ppv_Name)

Nurse (n_ID, ppv_ID, staff_Name, phone_No, hospital_Name,p_ID,ppv_Name)

Doctor (d_ID, ppv_ID, staff_Name, phone_No, hospital_Name, p_ID, ppv_Name)



<u>3NF</u>

Company (c ID, c Name, p ID, p Name, c address, office No)

Vaccine (vac_No, p_ID, vac_Type, batch_No)

Appointment (p ID, ppv ID, app Date, slot)

Doctor (d_ID, ppv_ID, staff_Name, phone_No, hospital_Name)

Nurse (n_ID, staff_Name, phone_No, hospital_Name)

Center (ppv ID, p ID, ppv Name, app Date)

Police (no_ID, ppv_ID, staff_Name, phone_No, station_Name)

Volunteer (v_ID, staff_Name, phone_No, ppv_ID, home_Address)

Certificate (batch_No, p_ID, ppv_ID, vac_Type, app_Date, vac_Status)

Patient (p_ID, p_Name, p_DOB, phone_No, p_Adddress, p_Age)



All Functional Dependencies

Fully Functional Dependencies

vac_No, ppv_ID, batch_No -> p_Id

Partial Dependencies

p_ID—> ppv_ID ,ppv_Name, app_Date, staff_Name, phone_No, home_Address, station_Name, hospital_Name, n_ID, d_ID, vac_Type, vac_Status, batch_No, slot

Transitive Dependencies

c_ID -> C_Name, p_Name, c_address, office_No

vac_No ---> vac_Type, batch_No

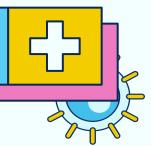
batch_No ---> vac_Status, vac_Type, app_Date





T T T

SQL COMMAND (DDL)



CREATE DATABASE AND TABLE

```
mysql> create table Patient
    -> (
    -> p_ID varchar(10) not null primary key,
    -> p_Name varchar(50),
    -> phone_No int,
    -> p_DOB date,
    -> p_Age int
    -> );
Query OK, 0 rows affected (0.03 sec)
```



INSERT TABLE

ттт

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```
mysql> insert into patient values
    -> ('103', 'Muhammad Hafiz Bin Husaini', '0177260176', '2002-1-26', '20'),
       ('104','Rusaini Ukhlimah Binti Roslan','01132874928','1997-4-17','25'),
       ('105','Muhammad Nazirul Bin Azfar','01183974646','1995-1-17','27'),
    -> ('106','Siti Rohana Binti Azman','01874342134','1991-4-23','31'),
      ('107','Nur Aishah Binti Johari','01792367891','2001-3-28','21'),
       ('108','Ahmad Fakrul Bin Mael','01325565178','1994-7-15','28')
       ('109','Natasha Binti Mohd Bakri','01151617730','1998-4-1',
    -> ('110','Saiful Ali Bin Saifuddin','01129277028','2000-7-5','22')
       ('111','Alia Batrisya Binti Kamaruddin','01121943796','1995-11-9','27'),
       ('112','Mohamed Ismail Bin Rahim','01128933088','1993-3-4','29'),
    -> ('113','Zuehyra Binti Ariff','01159658680','1990-6-27','32'),
-> ('114','Hasmah Bin Zulkifli','01898740902','2002-8-3','20'),
-> ('115','Ku Naim Bin Ku Wahab','01951661645','1997-12-9','25'),
       ('116','Cheong Li Chiy','01990312838','1998-5-5','24')
       ('117', 'Pavitra A/P Manimaharan', '01722252288', '2000-1-31', '22'),
        ('118','Nurul Syahirah Binti Roslan','01693377521','1991-2-28','31'),
       ('119','Nur Balqis Binti Zahri','01673411877','2001-9-11','21'),
      ('120','Alia Syaheera Binti Johari','01460875176','1996-4-15','26'),
    -> ('121','Thennish A/L Vertival','01340355584','1993-4-26','29')
       ('122','Esther Look Kher Shein','01221797383','2001-6-27','21')
    ->
Query OK, 20 rows affected (0.01 sec)
Records: 20 Duplicates: 0 Warnings: 0
+++++++++
+++++++++
```



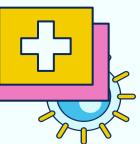
† PRINT CONTENT † (USING SELECT * FROM)

p_ID	p_Name	phone_No	p_DOB	p_Age
103	Muhammad Hafiz Bin Husaini	177260176	2002-01-26	20
104	Rusaini Ukhlimah Binti Roslan	1132874928	1997-04-17	25
105	Muhammad Nazirul Bin Azfar	1183974646	1995-01-17	27
106	Siti Rohana Binti Azman	1874342134	1991-04-23	31
107	Nur Aishah Binti Johari	1792367891	2001-03-28	21
108	Ahmad Fakrul Bin Mael	1325565178	1994-07-15	28
109	Natasha Binti Mohd Bakri	1151617730	1998-04-01	24
110	Saiful Ali Bin Saifuddin	1129277028	2000-07-05	22
111	Alia Batrisya Binti Kamaruddin	1121943796	1995-11-09	27
112	Mohamed Ismail Bin Rahim	1128933088	1993-03-04	29
113	Zuehyra Binti Ariff	1159658680	1990-06-27	32
114 i	Hasmah Bin Zulkifli	1898740902	2002-08-03	20
115 j	Ku Naim Bin Ku Wahab	1951661645	1997-12-09	25
116	Cheong Li Chiy	1990312838	1998-05-05	24
117	Pavitra A/P Manimaharan	1722252288	2000-01-31	22
118	Nurul Syahirah Binti Roslan	1693377521	1991-02-28	31
119	Nur Balqis Binti Zahri	1673411877	2001-09-11	21
120 i	Alia Syaheera Binti Johari	1460875176	1996-04-15	26
121		1340355584	1993-04-26	29
122 İ	Esther Look Kher Shein	1221797383	2001-06-27	21



TTT

SQL COMMAND (DDL) & (DML)



SELECT

mysql> SELECT p ID, p Name, p DOB, p Age from patient

-> order by p_Age desc

->;

+	+	+	+	+	+	+	+	+
+	+	+	+	+	+	+	+	+
+	+	+	+	+	+	+	+	+

p_ID	p_Name	p_DOB	p_Age
113	Zuehyra Binti Ariff	1990-06-27	32
106	Siti Rohana Binti Azman	1991-04-23	31
118	Nurul Syahirah Binti Roslan	1991-02-28	31
112	Mohamed Ismail Bin Rahim	1993-03-04	29
121	Thennish A/L Vertival	1993-04-26	29
108	Ahmad Fakrul Bin Mael	1994-07-15	28
105	Muhammad Nazirul Bin Azfar	1995-01-17	27
111	Alia Batrisya Binti Kamaruddin	1995-11-09	27
120	Alia Syaheera Binti Johari	1996-04-15	26
104	Rusaini Ukhlimah Binti Roslan	1997-04-17	25
115	Ku Naim Bin Ku Wahab	1997-12-09	25
109	Natasha Binti Mohd Bakri	1998-04-01	24
116	Cheong Li Chiy	1998-05-05	24
110	Saiful Ali Bin Saifuddin	2000-07-05	22
117 107	Pavitra A/P Manimaharan Nur Aishah Binti Johari	2000-01-31 2001-03-28	22 21
119	Nur Balgis Binti Zahri	2001-03-28	
122	Nur Baigis Biller Zalli Esther Look Kher Shein	2001-09-11	
103	Esther Look Kher Shern Muhammad Hafiz Bin Husaini	2001-06-27	20
114	Hasmah Bin Zulkifli	2002-01-20	20



nysql> UPDATE company



mysql> UPDATE company

-> set c Address = '30, CBD Perdana 3, Lingkaran Cyber Point Timur, Cyber

12, 63000 Cyberjaya, Selangor'

-> where c_ID = 'SBTECH'

->;

```
c_ID | p_ID | c_Name
                                                        c_Address
SBTECH | 103 | Sandbox Tech SDN BHD
                                                      | C2-2-8, Block C4, CBD Perdana 3, Lingkaran Cyber Point Timur, Cyber 12, 63000 Cyberjaya, Selangor
327242535
SBTECH | 104 | Sandbox Tech SDN BHD
                                                      | C2-2-8, Block C4, CBD Perdana 3, Lingkaran Cyber Point Timur, Cyber 12, 63000 Cyberjaya, Selangor
327242535
99SM | 105 | 99 Speedmart 1175 Pusat Bandar Latania | No 6 & 8, Jalan Nagasari E 36/E, Seksyen 36, 40470 Shah Alam, Selangor
99SM | 106 | 99 Speedmart 1175 Pusat Bandar Latania | No 6 & 8, Jalan Nagasari E 36/E, Seksyen 36, 40470 Shah Alam, Selangor
99SM | 107 | 99 Speedmart 1175 Pusat Bandar Latania | No 6 & 8, Jalan Nagasari E 36/E, Seksyen 36, 40470 Shah Alam, Selangor
333626863
       | 108 | Tropical Coffee Shop
                                                     | 20, Lor Seri Mahkota 25, Taman Seri Mahkota, 25150 Kuantan, Pahang
TROP | 109 | Tropical Coffee Shop
                                                      | 20, Lor Seri Mahkota 25, Taman Seri Mahkota, 25150 Kuantan, Pahang
rows in set (0.00 sec)
```

```
-> where c_ID = 'SBTECH
Query OK, 2 rows affected (0.01 sec)
Rows matched: 2 Changed: 2 Warnings: 0
ysql> select * from company;
                                                                                                                                                      office_No
        | p_ID | c_Name
                                                            c Address
                                                                                                                                                      327242535
                 Sandbox Tech SDN BHD
                                                             30, CBD Perdana 3, Lingkaran Cyber Point Timur, Cyber 12, 63000 Cyberjaya, Selangor
                                                             30, CBD Perdana 3, Lingkaran Cyber Point Timur, Cyber 12, 63000 Cyberjaya, Selangor
                                                                                                                                                      327242535
 SBTECH
                 Sandbox Tech SDN BHD
                 99 Speedmart 1175 Pusat Bandar Latania
                                                            No 6 & 8, Jalan Nagasari E 36/É, Seksyen 36, 40470 Shah Alam, Selangor
                                                                                                                                                      333626863
                 99 Speedmart 1175 Pusat Bandar Latania
                                                           No 6 & 8, Jalan Nagasari E 36/E, Seksyen 36, 40470 Shah Alam, Selangor
 99SM
                                                                                                                                                      333626863
                 99 Speedmart 1175 Pusat Bandar Latania
                                                           No 6 & 8, Jalan Nagasari E 36/E, Seksyen 36, 40470 Shah Alam, Selangor
                                                                                                                                                      333626863
                 Tropical Coffee Shop
                                                            20, Lor Seri Mahkota 25, Taman Seri Mahkota, 25150 Kuantan, Pahang
 TROP
                                                                                                                                                      390281995
                | Tropical Coffee Shop
                                                            20. Lor Seri Mahkota 25. Taman Seri Mahkota. 25150 Kuantan. Pahano
                                                                                                                                                      390281995
 rows in set (0.00 sec)
```

-> set c_Address = '30, CBD Perdana 3, Lingkaran Cyber Point Timur, Cyber 12, 63000 Cyberjaya, Selangor'





mysql> DELETE from nurse

-> where $n_{ID} = 'NS77881'$

->;

```
mysql> select * from nurse;
 n_ID
                         staff_Name
                                            phone_No
                                                         hospital_Name
            ppv_ID
 NS77091
            ppvKangar
                         Mohd Arif
                                            1115770740
                                                         Hospital Tuanku Fauziah
 NS77156
            ppvBBB
                         Alia Nabila
                                            132163516
                                                         Hospital Bukit Mertajam
                                                         Hospital Putrajaya
Hospital Tengku Ampuan Afzan
 NS77187
                         Jamal
                                             199272016
            ppvWPP
 NS77629
            ppvIM
                         Siti Nur Balgis
                                             195674234
                                                         Kuala Lumpur General Hospital
            ppvUM
                                             193426753
 NS77671
                         Azirul Imran
 NS77881
            ppvUM
                        Nik Nur Ain
                                            1113757702
                                                         Kuala Lumpur General Hospital
 rows in set (0.04 sec)
```

```
mysql> select * from nurse;
                       staff_Name
                                                      hospital_Name
 n_ID
           ppv_ID
                                         phone_No
                                         1115770740
 NS77091
           ppvKangar
                       Mohd Arif
                                                      Hospital Tuanku Fauziah
 NS77156
                       Alia Nabila
                                         132163516
                                                     Hospital Bukit Mertajam
           ppvBBB
 NS77187
           ppvWPP
                                          199272016
                                                      Hospital Putrajaya
                       Jama1
 NS77629
                       Siti Nur Balgis
                                          195674234
                                                      Hospital Tengku Ampuan Afzan
           ppvIM
 NS77671
           MUvaa
                       Azirul Imran
                                          193426753
                                                      Kuala Lumpur General Hospital
 rows in set (0.00 sec)
          +++++++++
```





mysql> ALTER TABLE patient

-> ADD COLUMN p_Address varchar(100) AFTER p_DOB;

BEFORE

AFTER

/sq1> :	select * from patient; 	+	+	
p_ID	p_Name	phone_No	p_DOB	p_Age
103 104 105 106 107 108 109 110	Ahmad Fakrul Bin Mael Natasha Binti Mohd Bakri Saiful Ali Bin Saifuddin Alia Batrisya Binti Kamaruddin	177260176 1132874928 1183974646 1874342134 1792367891 1325565178 1151617730 1129277028 1121943796	2002-01-26 1997-04-17 1995-01-17 1991-04-23 2001-03-28 1994-07-15 1998-04-01 2000-07-05 1995-11-09	20 25 27 31 21 28 24 22 27
112 113 114 115 116 117 118 119	Mohamed Ismail Bin Rahim Zuehyra Binti Ariffi Hasmah Bin Zulkifli Ku Naim Bin Ku Wahab Cheong Li Chiy Pavitra A/P Manimaharan Nurul Syahirah Binti Roslan Nur Balqis Binti Zahri	1128933088 1159658680 1898740902 1951661645 1990312838 172225288 1693377521 1673411877	1993-03-04 1990-06-27 2002-08-03 1997-12-09 1998-05-05 2000-01-31 1991-02-28 2001-09-11	29 32 20 25 24 22 31 21
120 121 122	Alia Syaheera Binti Johari Thennish A/L Vertival Esther Look Kher Shein	1460875176 1340355584 1221797383	1996-04-15 1993-04-26 2001-06-27	26 29 21

+	+	+	+	+	+	+	+	+
+	+	+	+	+	+	+	+	+
+	+	+	+	+	+	+	+	+

mysql> ALTER TABLE patient -> ADD COLUMN p_Address varchar(100) AFTER p_DOB; Query OK, 0 rows affected (0.20 sec) Records: 0 Duplicates: 0 Warnings: 0							
mysql> select * from	n patient;						
p_ID p_Name		phone_No	p_DOB	p_Address	p_Age		
104 Rusaini Ukk 105 Muhammad Na 106 Siti Rohana 107 Nur Aishah 108 Ahmad Fakru 109 Natasha Bir 110 Saiful Ali 111 Alia Batri 112 Mohamed Isr 113 Zuehyra Bir 114 Hasmah Bir 115 Ku Naim Bir 116 Cheong Li c 117 Pavitra A/r 118 Nurul Syah 119 Nur Balqis 120 Alia Syahee 121 Thennish A/r	nti Mohd Bakri Bin Saifuddin Mail Bin Rahim Iti Ariff Zulkifli Ku Wahab Chiy Manimaharan Irah Binti Roslan Binti Zahri Brati Johari	177260176 1132874928 1183974646 1874342134 1792367891 1325565178 1151617730 1129277028 1121943796 1128933088 1159658680 1898740902 1951661645 1990312838 1722252288 1693377521 1673411877 1460875176 1340355584 1221797383	2002-01-26 1997-04-17 1995-01-17 1991-04-23 2001-03-28 1994-07-15 1998-04-01 2000-07-05 1995-11-09 1993-03-04 1990-06-27 2002-08-03 1997-12-09 1998-05-05 2000-01-31 1991-02-28 2001-09-11 1996-04-15 1993-04-26 2001-06-27	NULL NULL NULL NULL NULL NULL NULL NULL	20 25 27 31 21 22 24 22 27 29 20 25 24 22 21 26 29 21		

20 rows in set (0.00 sec)

FUNCTION (MIN)

+ + +

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Find the youngest patient and display all the patient ID and name.

```
mysql> select p_ID, p_Name, p_Age
    -> from patient
    -> where p_Age = (select min(p_Age) from patient)
    ->;
```



COMPLEX SQL (JOIN TABLE)

Retrieve patient ID, name, appointment date, and slot time where the appointment is in December only sorted by appointment date with ascending order.

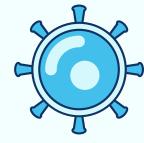
mysql> select p.p_ID, p.p_Name, a.app_Date, a.slot

- -> from patient p, appointment a
- -> where p.p_ID=a.p_ID

+ + +

- -> and month(app_Date)=12
- -> order by app_Date asc;

```
nysql> select p.p_ID, p.p_Name, a.app_Date, a.slot
    -> from patient p, appointment a
    -> where p.p_ID=a.p_ID
    -> and month(app_Date)=12
    -> order by app_Date asc;
                                                    slot
       p_Name
                                       app_Date
  108
         Ahmad Fakrul Bin Mael
                                       2021-12-04
                                                    08:30:00
 109
         Natasha Binti Mohd Bakri
                                       2021-12-04
                                                    08:30:00
 113
                                       2021-12-04
         Zuehyra Binti Ariff
                                                    09:00:00
 119
         Nur Balqis Binti Zahri
                                       2021-12-05
                                                    08:30:00
 110
         Saiful Ali Bin Saifuddin
                                       2021-12-06
                                                    11:00:00
 115
                                       2021-12-06
         Ku Naim Bin Ku Wahab
                                                    11:40:00
         Cheong Li Chiy
                                       2021-12-06
                                                    11:40:00
                                                    11:40:00
         Alia Syaheera Binti Johari
                                       2021-12-06
         Muhammad Hafiz Bin Husaini
                                       2021-12-17
                                                    09:30:00
         Thennish A/L Vertival
                                       2021-12-17
                                                    09:30:00
         Esther Look Kher Shein
                                       2021-12-22
                                                    08:30:00
11 rows in set (0.00 sec)
```



DATA DICTIONARY



ENTITY: PATIENT

ATTRIBUTE	DATA TYPE	DESCRIPTION	POSSIBLE VALUE	PK/FK
p_ID	varchar(10)	Define patient ID	103	PK
p_Name	varchar(50)	Define patient name	Muhammad Hafiz Bin Husaini	
phone_No	int	Define patient phone number	0177260176	
p_DOB	date	Define patient date of birth	2002-1-26	
p_Address	varchar(100)	Define patient address	A-G-20 CoPlace 2, Jalan Usahawan 1, 63000 Cyberjaya, Selangor.	
p_Age	int	Define patient age	20	



CONCLUSION



-++++++

Nowadays vaccine is important to ensure our healthy in order to prevent Covid-19. This is because Covid-19 is killing people on a large scale. Even though being vaccinated not giving us 100% protection from Covid-19, but it helps to reduce the effect and transmission of this virus. In conclusion, this system can be extended to give another benefits for society in order to get their self vaccinated. So, our team hope, MyVax can acts as a big library for the user and provides all information regarding vaccines to their users.



Thank You!

Presentation Video:

https://www.youtube.com/watch?v=uj-rzUFoGwa





