





הפקולטה למדעים מערך פרויקטים ושיתוף פעולה עם התעשייה

Specification Document MaintControl







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1. Project's Goal:

The goal of the project is to create a generic WEB-based system, which provides a solution to the problem of supervision and control of the maintenance carried out by different companies in different locations in the country, thus optimizing the daily work of the maintenance workers.

2. <u>System Description</u>:

Software application:

Will be developed as a responsive Web application based on REACT, both for computers and mobile phones.

Data reception/Database:

The method of receiving the data will be carried out on a SQL relational database based on Postgres. These tables will store the parameters that will be reflected in the system, as well as the user details and other settings.





Screens:

- 1) Login screen
- 2) Reset password
- 3) Sign up
- 4) Guides
- 5) Daily missions
- 6) Task page
- 7) Mission's history
- 8) Admin users management
- 9) User's information(location, role, company, etc.)





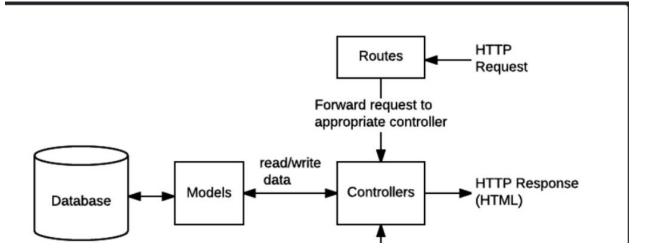
Server side:

- 1) API:
 - a) Administrator add/update/delete/get/search users
 - b) Manager upload/ delete/download/Edit guides
 - c) Manager add/update/delete/get/search missions
 - d) Manager add/update/delete/get/search tasks
 - e) Maintenance comment, add photo, get task, mark task status
 - f) User login/get user settings/download guides
- 2) Using express middleware
- 3) Connection to PostgresSQL DB on GCP SQL instance
- 4) Using routes and controllers
- 5) Using buckets in GCP to upload and download files and images





Server architecture:







- 3. Screen's details:
 - a) Login screen:

Each user will enter the user information generated for him, a password and a company ID.

Search	Login Page	MAINTCONTROL
	Username: Password: © Company ID:	
E Q Search	Password Reset	MAINTCONTROL
	Please enter a valid email for password resetting. If your Email is in our database, a conformation Email will be sent to you. Email: Reset Password or Username	





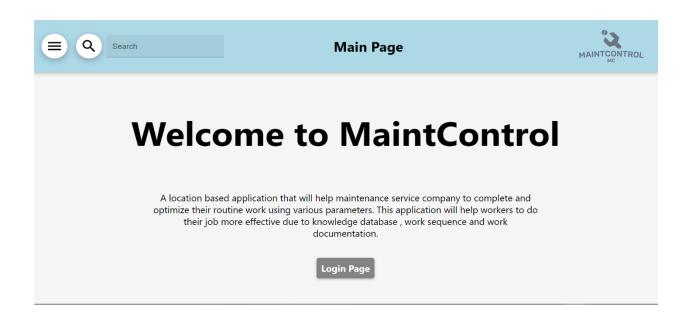
b) Home screen:

The homepage changes according to the type of user (there are 3 types of users):

Maintenance man: screens of Emergency & Daily missions, sub-missions, locations on the map, visit history and guides will appear.

Manager: In addition to the other screens mentioned above, manager will have screens that show the availability of various maintenance personal will appear, as well as the option to edit various guides.

Administrator: In addition to the other screens mentioned above, user management screens will appear (can add users/ update users and their permissions/ delete users).



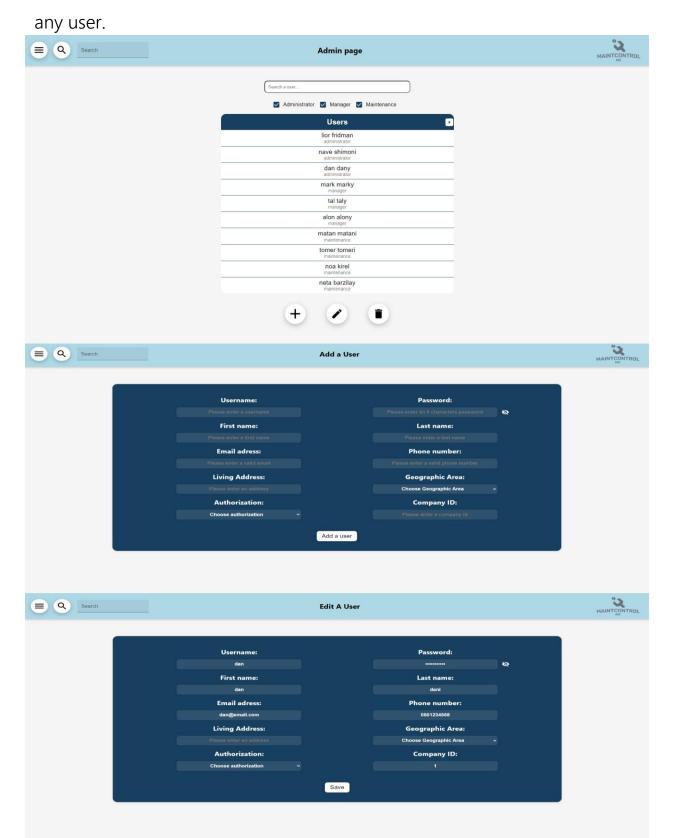




c) Admin screen:

The admin page is used only by administrators, and it includes list of all

users and their roles. In this page the administrator can add/update/delete







d) Guides screen:

The guides screen includes different guides detailing the procedures for different tasks. The maintenance person will be able to view the manuals without being able to edit or delete them. The administrators will be able to edit the guides as needed and add new ones to the bucket on the GCP. Also, clicking on the guide will take you to the guide page where the general details of the guide and a PDF or WORD file will usually be displayed.

	arch		Guide	s Page			MAINTCONTROL
			+				
	guide 1 This is guide 1	guide 2 This is guide 2	guide 3 This is guide 3	guide 4 This is guide 4	guide 5 This is guide 5	guide 6 This is guide 6	
	guide 7 This is guide 7	guide 8 This is guide 8	guide 9 This is guide 9	guide 10 This is guide 10	guide 11 This is guide 11	guide 12 This is guide 12	
■ Q se	earch		Edit A	Guide			MAINTCONTROL
			Guide's Cuid Guide's This is g Guide' ا ماریم واحی Sav	e 11 details: uide 11 s file: לא נבחר קובן			

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e) Missions & tasks:

The missions page contains list of missions that needs to be completed and filled in by the maintenance man. Each mission includes all the necessary details, the sub-tasks, location on map and the history about the place.

Q Search	Daily N	lissions						MAINT
Welcome Admin, Total missions: 20					+ 🗸		£ !	SAVE
Replace elevator cables	<u>Vroense</u> Medium	<u>Chz</u> Rishon Lezion	Arca: Central Israel	Date: 2022-01-01	Past Davis 485	Available Users	*	3
Fix elevator doors	<u>Urgency:</u> Low	<u>Ctor</u> Ashdod	<u>Area:</u> Southern Israel	<u>Date:</u> 2022-01-03	<u>Past Days:</u> 483	Available Users		0
Upgrade elevator control system	Urgency High	<u>Chz</u> Rishon Lezion	Arsa: Central Israel	Date: 2022-01-03	Past Davs: 483	Available Users	•	D
Clean and lubricate elevator parts	<u>Urgency</u> Low	<u>Chz</u> Rishon Lezion	<u>Area:</u> Central Israel	Date: 2022-01-04	Past Davs: 482	Available Users		3
Install new elevator buttons	<u>Urgency</u> Medium	<u>Cte</u> Rishon Lezion	<u>Area:</u> Central Israel	<u>Date:</u> 2022-01-05	Past Days: 481	Available Users		D
Improve elevator lighting	Urgency Low	<u>Chr</u> Afula	Area Northern Israel	Date: 2022-01-05	Past Davis 481	Available Users		3



1.

הפקולטה למדעים מערך פרויקטים ושיתוף פעולה עם התעשייה



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<u>Product:</u> Elevator	Problem: Replace broken control panel	Last Updated: 2023-03-24	e	•					Active Color	ana an
C2M301					07 T	ברוססיין אליעור רוס		501 0 00	מידבור בידבור הארוני נורטי	
Product:	Problem:	Last Updated:	(10 2 4 1 2 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1		80 8	T AND P	
Elevator C2M301	Replace broken door roller	2023-03-28			And a second			and and a second		X,
Product	Problem:	Last Updated:						1		in all the second se
Elevator C2M301	The elevator has no power, making it unu 👻	2023-03-21						лие латык <u>к</u> ф		
Product	Problem:	Last Updated:			Task	Task	Description	Date	et © OpenSt	treetMap contri Status
Elevator R9X845	Replace burnt-out motor	2023-03-25		0	number 1	name Task 1	Lorem ipsum dolor sit amet	2023-03-	Yes	Complete
Product	Problem:	Last Updated:			2	Task 2	Consectetur adipiscing elit	01 2023-03-	No	Incomplet
Elevator WJL719	Inspect and repair brake system	2023-03-26	Ê				-	02 2023-03-		
Product:	Problem:	Last Updated;			3	Task 3	Sed do eiusmod tempor incididunt	03	Yes	Complete
Elevator R9X845	Replace damaged elevator cable	2023-03-26	8		4	Task 4	Lorem ipsum dolor sit amet	2023-03- 01	Yes	Complete
					5	Task 5	Consectetur adipiscing elit	2023-03- 02	No	Incomplet
Product: Elevator	Problem: Clean and lubricate elevator gears	Last Updated: 2023-03-31	8	0	6	Task 6	Sed do eiusmod tempor incididunt	2023-03- 03	Yes	Complete
WJL719					*					
Q	Search			c:11:	an a taala					0
Q	June			Filli	ng a task					MAINTO
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- 4. Methodologies:
 - a) <u>Front</u>



React is a JAVASCRIPT based library, used to build various WEB systems. Its flexibility and the convenience of working with it and building an internet system for mobile and different types of computers are the features that led us to choose this FRAMEWORK as opposed to others.

b) <u>Backend</u>



We chose Node.js technology following the decision to choose the React FRAMEWORK, and build a powerful and flexible server side quickly. The tool allows you to build different routers and controllers in a quick and convenient way.

We will use Express - backend framework for node.js. It is a middleware that is very convenient to work with in order to create various REST API requests with the server.





c) <u>Development</u>

language:

Backend: The system will be developed in the Node.js development language

Frontend: HTML, CSS, JS-React.

d) Version Control

Working with GitHub.

e) <u>Data Base</u>

Working with Postgres - an excellent tool for building SQL schemas that will serve us when using the coordinates and the API used to integrate the map. Also, SQL tables are a very convenient way to create permissions and user details, and also tables containing the tasks will make their management easier.





5. Platforms:

Development environment:

The system will be developed in the Visual Studio Code development environment. The environment supports debugging, Git view control, syntactic illustration of code fragments, intelligent code completion, and lateral code changes.

We also use docker, docker-compose for uploading images in development and also use them on the GCP.

For working with PostgreSQL tables we use pgAdmin.

Deployment environment:

The system will be deployed on GCP (Google Cloud Platform).

GCP is a powerful environment that includes the following things:

- 1) Container registry upload docker images.
- 2) Buckets cloud storage for uploading and downloading files
- 3) Secret manager handling configuration (environment variables and secret files)
- 4) VPC configure networks on cloud
- 5) SQL instances provides environment to create databases in different types (we used PostgreSQL).

And many more features.



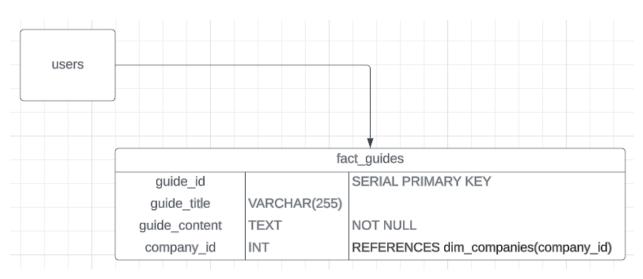


6. Database Structure:

<u>Users:</u>

	dim_compa	nies				
company_id		SERIAL PRIMARY KEY				
company_name	VARCHAR(255)	Unique				
			di	m_users		
		user_id		SERIAL PRIMARY KEY		location
		user_name	VARCHAR(255)	Unique NOT NULL		-
		first_name	VARCHAR(255)	NOT NULL		
		last_name	VARCHAR(255)	NOT NULL		
		email	VARCHAR(255)	Unique NOT NULL		
		password	VARCHAR(255)	NOT NULL		
		phone	VARCHAR(50)	NOT NULL		
		role	VARCHAR(50)	constraints(maintainance, manager, administrator)		
		company_id	INT	REFERENCES dim_companies(company_id)		
		location_id	INT	REFERENCES fact_location(location_id)	•	

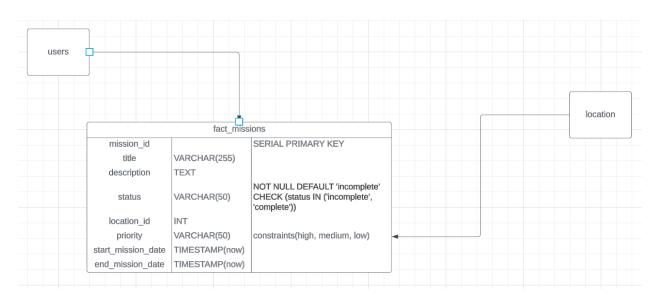
<u>Guides</u>:







Missions:



<u>Tasks</u>:

			Missions							
	dim_comments									
comment_id		ERIAL PRIMARY KEY				fact_tasks				
title	VARCHAR(255)		>	task_id		SERIAL PRIMARY KI	ΞY			
comment	TEXT			mission_id	INT	NOT NULL REFEREN	ICES missions(id) O	N DELETE C	ASCADE	
				title	VARCHAR(255)					
				description	TEXT					
				status	VARCHAR(50)	NOT NULL DEFAULT	'incomplete' CHECK	(status IN ('i	ncomplete	', 'complete'
	dim photos			comment_id	INT	REFERENCES dim_c	omments(comment_	_id)		
photo id	uin_priotos	SERIAL PRIMARY KEY		photos_id	INT	REFERENCES dim_p	hotos(photo_id)			
photo_name	VARCHAR(255)	SERIAL FRIMART RET								
photo	TEXT	Туре								





Location:

	fact_locati	on			
location_id		SERIAL PRIMARY KEY			
address_name	VARCHAR(255)	UNIQUE NOT NULL			
city	VARCHAR(255)	UNIQUE NOT NULL			
country	VARCHAR(255)	UNIQUE NOT NULL			
latitude	FLOAT(25)	NOT NULL DEFAULT 0			
longitude	FLOAT(25)	NOT NULL DEFAULT 0			
work_zone	INT	NOT NULL REFERENCES (zone_id)			
				dim_zone	
			zone_id		SERIAL PRIMARY KE
			zone_name	VARCHAR(50)	constraints(north, cent

7. Flowchart:

