

DVELOPER MANUAL

- The system starts by running PASSDLG function which prompts the user to enter Email and password.

```
WaterChannelMonitoring.m  imwrite.m  passdlg.m  +
171 -         end
172 -         answer.Pass = get(h.edit{end}, {'Password'});
173 -     end
174 -     %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
175 -     try
176 -
177 -         %getJWT(answer.User{1}, answer.Pass{1})
178 -
179 -         token = getJWT(answer.User{1}, answer.Pass{1})
180 -         appl(token)
181 -         delete(fh)
182 -
183 -     catch
184 -
185 -
186 -         delete(fh)
187 -         passdlg
188 -
189 -
190 -     end
191 - else
192 -     [answer.User, answer.Pass] = deal({' '});
193 - end
194 - drawnow
195 - end
```

- getJWT function is called to retrieve JWT access token. JWT access token are necessary to access Thingsboard's database.

- getJWT accepts username and password and returns the token that is going to be used for later API calls.
- App1 is the system GUI which accepts JWT token to start running.
- Token will be saved as a public property that will be used to call other functions.

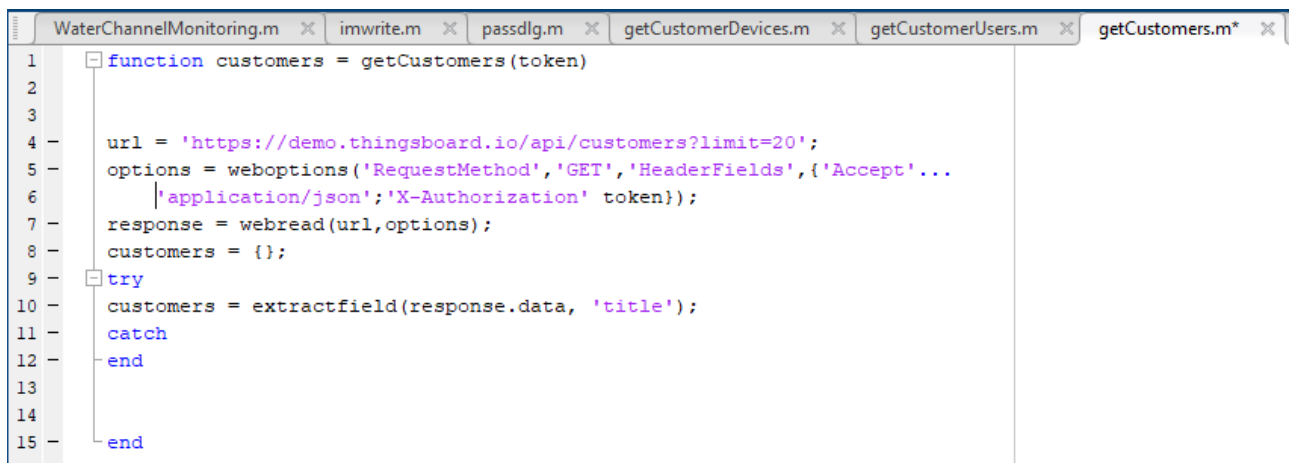
```

81
82 properties (Access = private)
83     AddWindowApp
84 end
85
86 properties (Access = public)
87     token        %JWT access token for the admin
88     signedUser    %name of the admin according to Thingsboard.
89 end
90
91
92 methods (Access = public)
93
94     function updateTree(app,tree)
95
96         if strcmp(tree,'camTab')
97             treeType = app.MyTree;
98
99         elseif strcmp(tree,'trainTab')
100             treeType = app.MyTree_2;
101
102
103         end
104
105

```

- Signeduser property gets the name of the current admin to create a folder with admin's name and save any related files in that folder.

- To communicate with Thingsboard, REST API calls are used to retrieve information.
- Example: `getCustomerDevices` is a function that retrieves the cameras for a specific organization. The function accepts JWT access token of the admin and returns all the organizations for that admin.



```

1  function customers = getCustomers(token)
2
3
4  url = 'https://demo.thingsboard.io/api/customers?limit=20';
5  options = weboptions('RequestMethod','GET','HeaderFields',{'Accept'...
6      'application/json','X-Authorization' token});
7  response = webread(url,options);
8  customers = {};
9
10 try
11     customers = extractfield(response.data, 'title');
12 catch
13 end
14
15 end

```

- ◆ url: address of the request.
 - ◆ options: options and headers required to do the call.
 - ◆ webread: built in Matlab function to do the call.
 - ◆ This format is followed in all the functions that are used to communicate with Thingsboard.
- Swagger-ui can be used to get URL, Weboptions for the call.

<https://demo.thingsboard.io/swagger-ui.html#/>

- Swagger-ui give the commands in curl, which is a tool can be used in the command prompt. The developer has to convert this curl command to a

matlab function using Webread and webwrite functions in the previously explained format.