Packaging and Deploying SPFX Solutions

Lab Time: 60 minutes

Lab Folder: C:\Student\Modules\06_PackagingAndDeployment\Lab

Lab Overview: Learning how to publish and install SharePoint Framework solutions correctly is a core skill that every SharePoint developer should know. In this lab you will create an app catalog and then you will learn how to publish and install SPFx solutions.

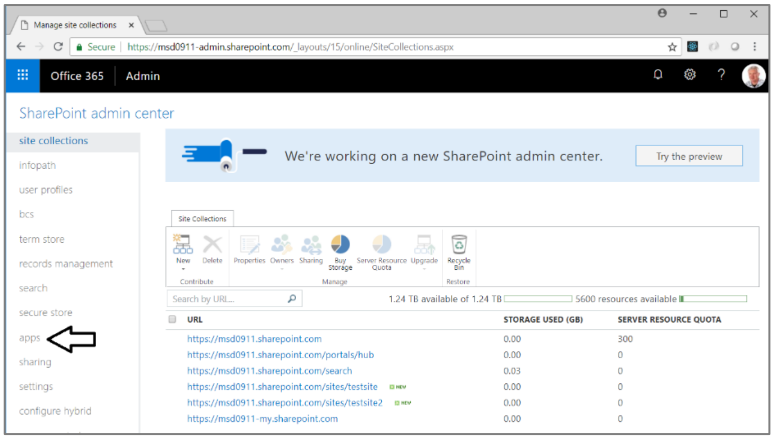
Exercise 1: Create an App Catalog Site Collection

In this exercise you will create an app catalog to support app deployment and installation.

1. Using the browser, navigate to the SharePoint admin center for your Office 365 tenant using the following URL.

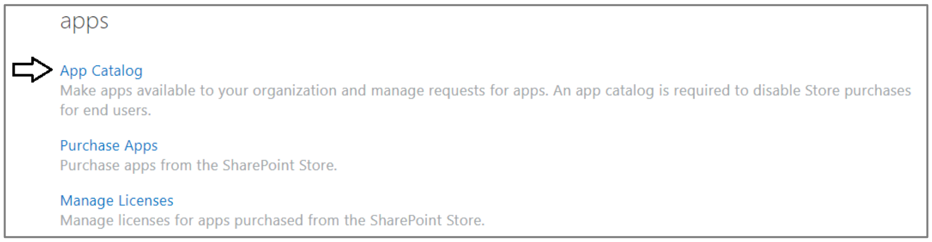
```
https://[TENANT_NAME]-admin.sharepoint.com
```

2. Click on the **apps** link to see the **apps** page.



URL	STORAGE USED (GB)	SERVER RESOURCE QUOTA
https://msd0911.sharepoint.com	0.00	300
https://msd0911.sharepoint.com/portals/hub	0.00	0
https://msd0911.sharepoint.com/search	0.03	0
https://msd0911.sharepoint.com/sites/testsite NEW	0.00	0
https://msd0911.sharepoint.com/sites/testsite2 NEW	0.00	0
https://msd0911-my.sharepoint.com	0.00	0

3. Click on the first link in the **apps** page with the caption of **App Catalog**.



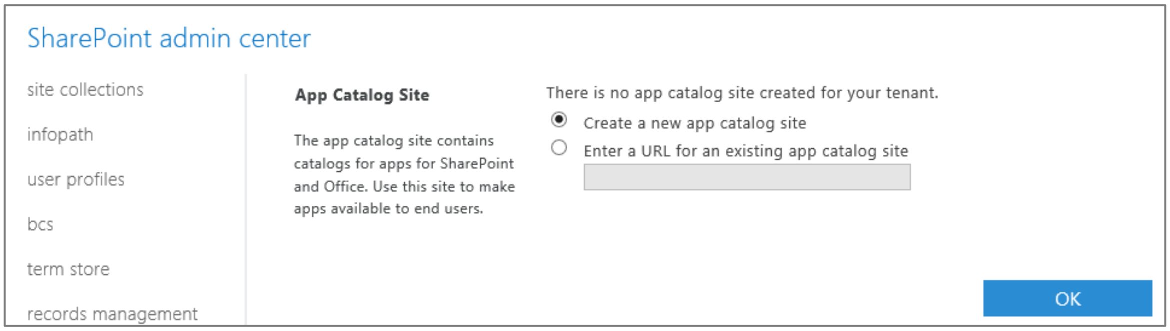
apps

App Catalog
Make apps available to your organization and manage requests for apps. An app catalog is required to disable Store purchases for end users.

Purchase Apps
Purchase apps from the SharePoint Store.

Manage Licenses
Manage licenses for apps purchased from the SharePoint Store.

4. On the **App Catalog Site** page, leave the default selection of **Create a new app catalog site** and click **OK**.



App Catalog Site

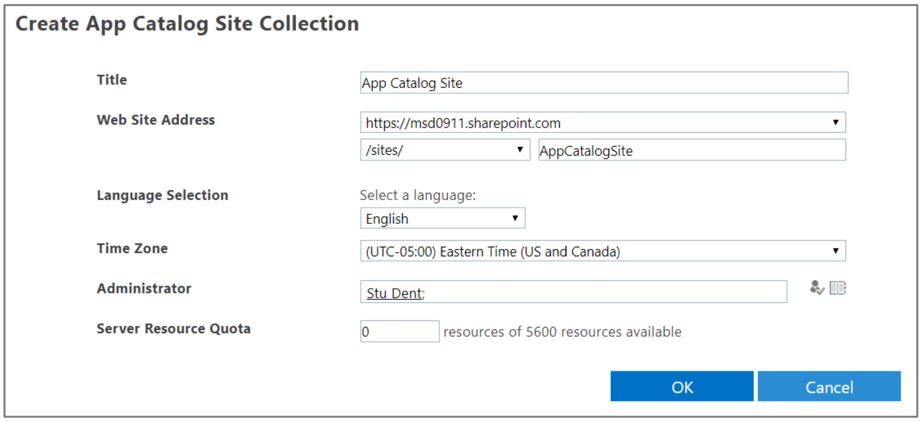
The app catalog site contains catalogs for apps for SharePoint and Office. Use this site to make apps available to end users.

There is no app catalog site created for your tenant.

● Create a new app catalog site

○ Enter a URL for an existing app catalog site

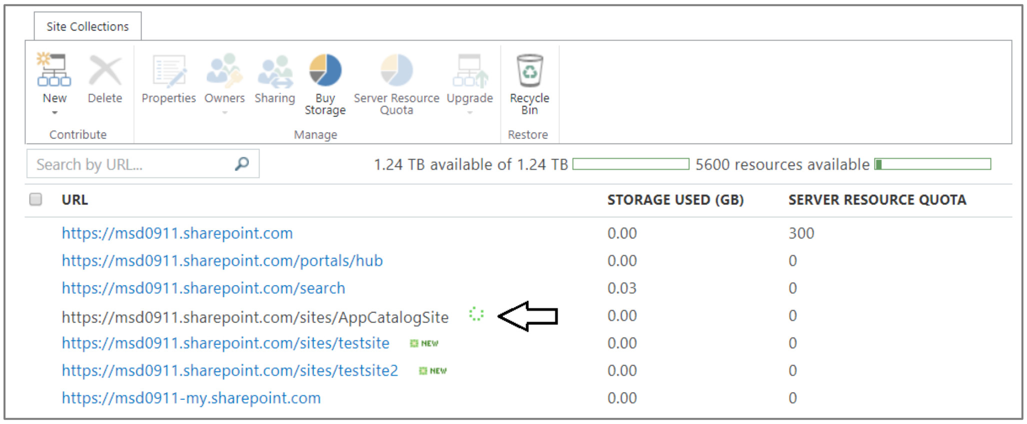
5. On the **Create App Catalog Site Collection** page…
   a) Enter a Title of **App Catalog Site**.
   b) Enter a **Web Site Address** of **https://[YOUR_TENANT_NAME].sharepoint.com/sites/AppCatalogSite**.
   c) Fill in the rest of the page using data shown in the following screenshot and click **OK** to create the App Catalog site collection.



Create App Catalog Site Collection

Title	App Catalog Site
Web Site Address	https://msd0911.sharepoint.com /sites/ AppCatalogSite
Language Selection	Select a language: English
Time Zone	(UTC-05:00) Eastern Time (US and Canada)
Administrator	Stu Dent;
Server Resource Quota	0 resources of 5600 resources available

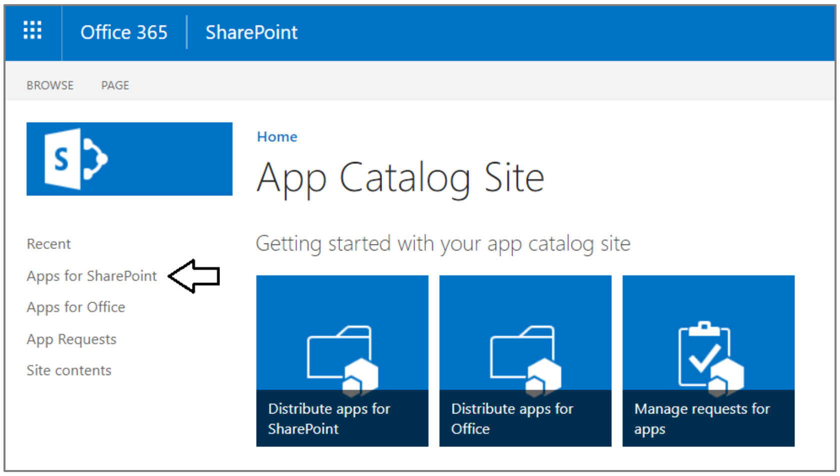
   d) You should be able to see that the new site collection is being created.



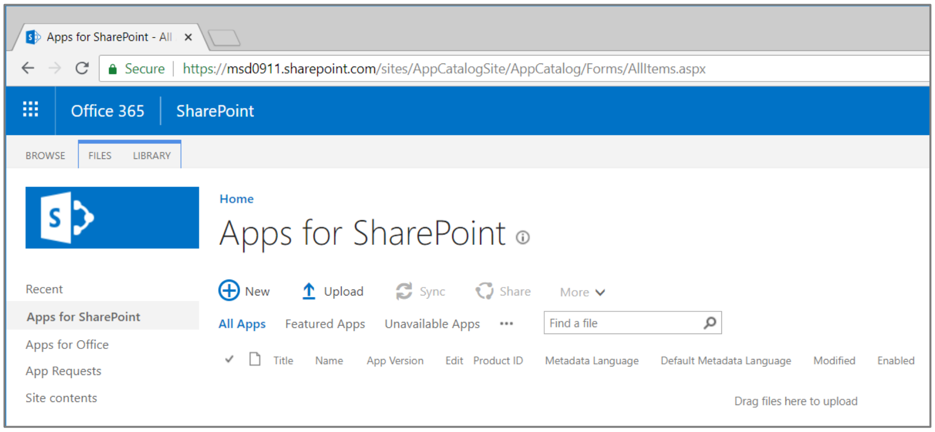
1.24 TB available of 1.24 TB 5600 resources available

URL	STORAGE USED (GB)	SERVER RESOURCE QUOTA
https://msd0911.sharepoint.com	0.00	300
https://msd0911.sharepoint.com/portals/hub	0.00	0
https://msd0911.sharepoint.com/search	0.03	0
https://msd0911.sharepoint.com/sites/AppCatalogSite	0.00	0
https://msd0911.sharepoint.com/sites/testsite NEW	0.00	0
https://msd0911.sharepoint.com/sites/testsite2 NEW	0.00	0
https://msd0911-my.sharepoint.com	0.00	0

   e) Once the new site collection has been fully created, navigate to it to see the App Catalog site.



f) You should now see the default view of the document library named **Apps for SharePoint**. This is the library where you will upload your solution packages to publish them.



Now you are done configuring the your SharePoint Online tenant for publishing and deploying SharePoint Framework. Now, you will work to publish and install several different SharePoint Framework solution packages so you can get first-hand experience deploying SharePoint solutions in an Office 365 tenant.

Exercise 2: Build and Deploy a Solution Package with a Webpart

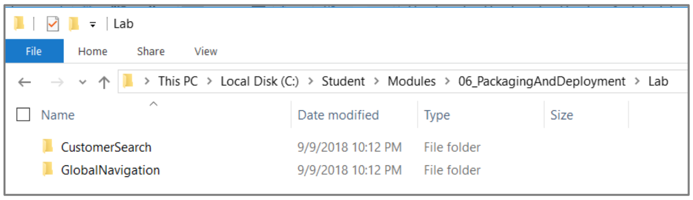
In this exercise you will go through the steps to build solution packages for two SharePoint Framework projects for distribution.

1. Open the SharePoint Framework project named **CustomerSearch**.

   a) Using Windows Explorer, navigate to the lab folder for this module at the following path.

```
C:\Student\Modules\06_PackagingAndDeployment\Lab
```

   b) You should see two folders with SharePoint Framework projects named **CustomerSearch** and **GlobalNavigation**.

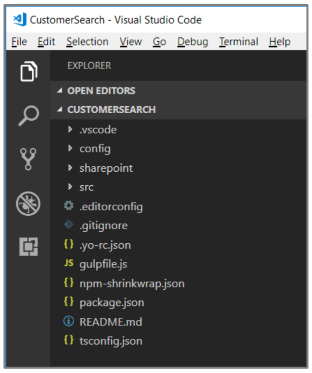


This PC > Local Disk (C:) > Student > Modules > 06_PackagingAndDeployment > Lab

Name	Date modified	Type	Size
CustomerSearch	9/9/2018 10:12 PM	File folder	
GlobalNavigation	9/9/2018 10:12 PM	File folder	

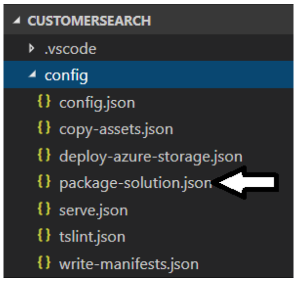
c) Open the folder named **CustomerSearch** with Visual Studio Code.

d) Take a moment to inspect the files and folder inside the project.



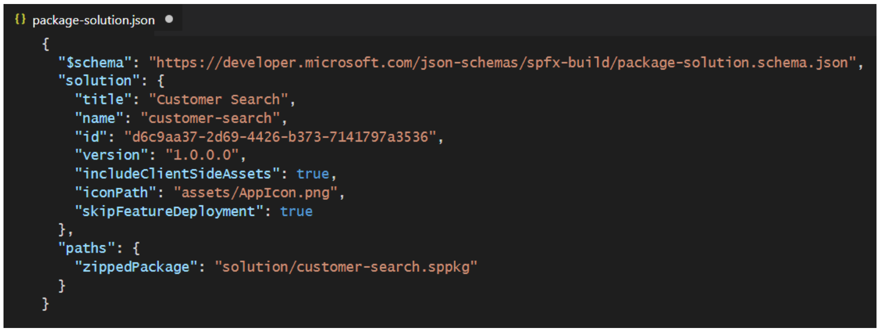
```
CUSTOMERSEARCH
  .vscode
  config
  sharepoint
  src
  .editorconfig
  .gitignore
  .yo-rc.json
  gulpfile.js
  npm-shrinkwrap.json
  package.json
  README.md
  tsconfig.json
```

e) Inside the config folder, locate and open the configuration file named **package-solution.json**.



```
CUSTOMERSEARCH
  .vscode
  config
    config.json
    copy-assets.json
    deploy-azure-storage.json
    package-solution.json
    serve.json
    tslint.json
    write-manifests.json
```

f) Review the child properties of the **solution** property in **package-solution.json**. There is no need to make any edits to this file.



```
{
  "$schema": "https://developer.microsoft.com/json-schemas/spfx-build/package-solution.schema.json",
  "solution": {
    "title": "Customer Search",
    "name": "customer-search",
    "id": "d6c9aa37-2d69-4426-b373-7141797a3536",
    "version": "1.0.0.0",
    "includeClientSideAssets": true,
    "iconPath": "assets/AppIcon.png",
    "skipFeatureDeployment": true
  },
  "paths": {
    "zippedPackage": "solution/customer-search.sppkg"
  }
}
```

Note that he **skipFeatureDeployment** property is set to **true**. This makes it possible to deploy the webpart to every site collection at once without having to install the solution on a site collection by site collection basis.

2. Run npm install to restore the require npm packages to the project.

a) Use the **View > Terminal** menu command to display the Integrated Terminal.

b) Locate the console of the **Terminal** where you can type in and execute **npm** commands.

c) Run the npm install command.

```
npm install
```

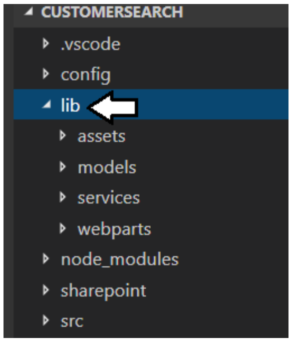
Once you have restored the npm packages, you can now build the solution into a distribution package.

3. Build the solution into a package for distribution.

a) From the Terminal console, execute the gulp build command.

```
gulp build
```

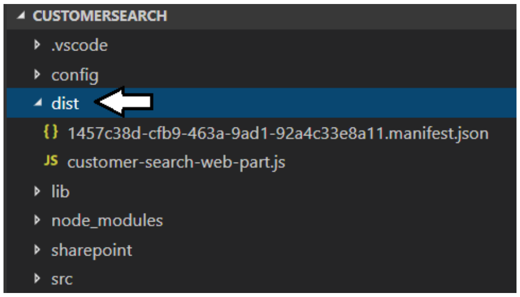
b) When you execute the **gulp build** command, you will notice that it adds a new folder to the project named **lib**.



c) Bundle the solution by executing the following on the command line:

```
gulp bundle --ship
```

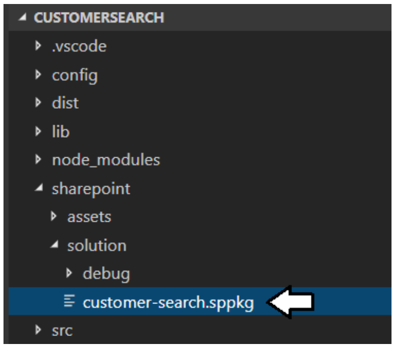
d) When you execute the **gulp bundle** command, you will notice that it adds a new folder to the project named **dist**.


CUSTOMERSEARCH
.vscode
config
dist
{} 1457c38d-cfb9-463a-9ad1-92a4c33e8a11.manifest.json
JS customer-search-web-part.js
lib
node_modules
sharepoint
src

e) Package the solution by executing the following on the command line:

```
gulp package-solution --ship
```

f) When you execute the **gulp package-solution**, the command generates a solution package named **customer-search.sppkg** in the **sharepoint/solution/debug** folder.

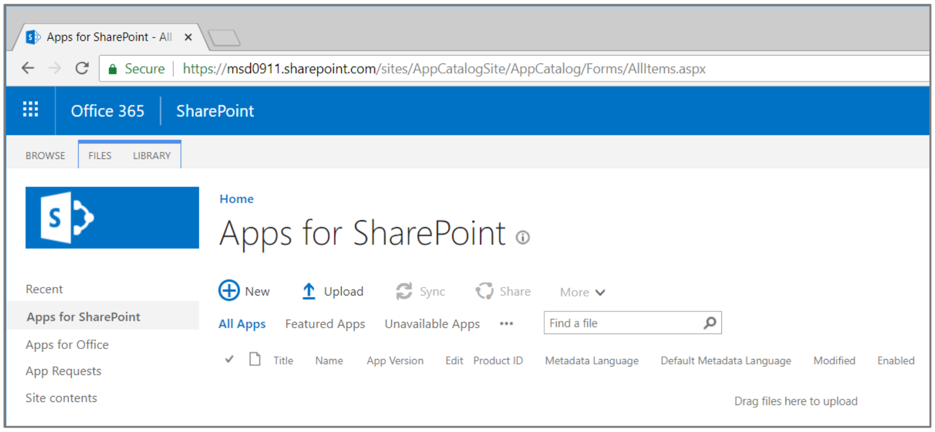


Now you have created the solution package you need to publish to the app catalog.

4. Deploy and trust the SharePoint package:

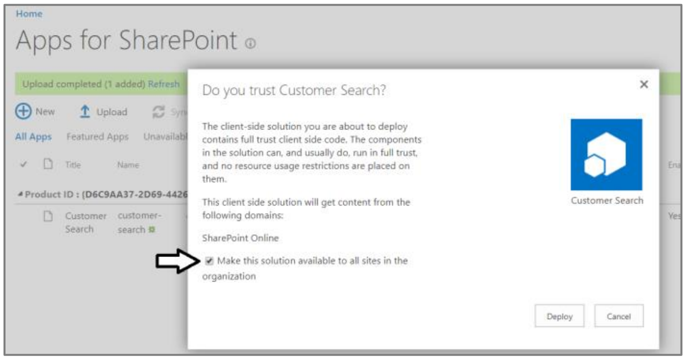
   a) In the browser, navigate to your SharePoint Online App Catalog.

   b) Select the **Apps for SharePoint** link in the navigation:



   c) Drag the package from **\sharepoint\solution\customer-search.sppkg** into the **Apps for SharePoint** library.

   d) In the **Do you trust customer-search.sppkg?** dialog, select **Deploy**.



Do you trust Customer Search?

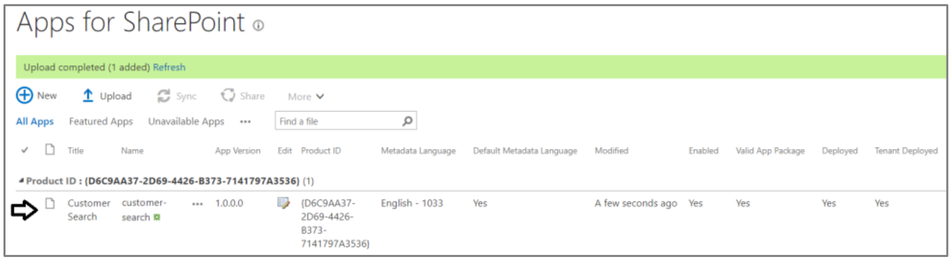
The client-side solution you are about to deploy contains full trust client side code. The components in the solution can, and usually do, run in full trust, and no resource usage restrictions are placed on them.

This client side solution will get content from the following domains:

SharePoint Online

☑ Make this solution available to all sites in the organization

   e) After a few seconds, you should see that solution package has been installed.



Apps for SharePoint

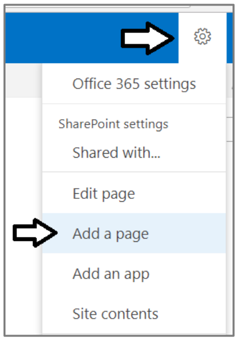
Upload completed (1 added) Refresh

Title	Name	App Version	Edit	Product ID	Metadata Language	Default Metadata Language	Modified	Enabled	Valid App Package	Deployed	Tenant Deployed
Product ID : {D6C9AA37-2D69-4426-B373-7141797A3536} (1)											
Customer Search	customer-search	1.0.0.0		{D6C9AA37-2D69-4426-B373-7141797A3536}	English - 1033	Yes	A few seconds ago	Yes	Yes	Yes	Yes

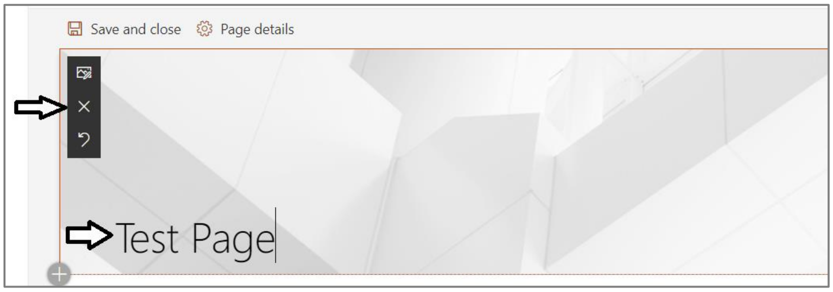
5. Add a Customer Search webpart to a modern page.

   a) Navigate to the root SharePoint site in your Office 365 tenant.

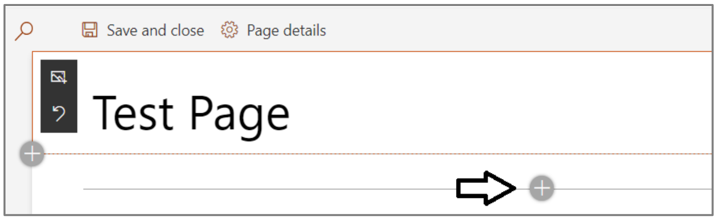
   b) From the **Site Actions** menu, select **Add a page** to create a new modern page.



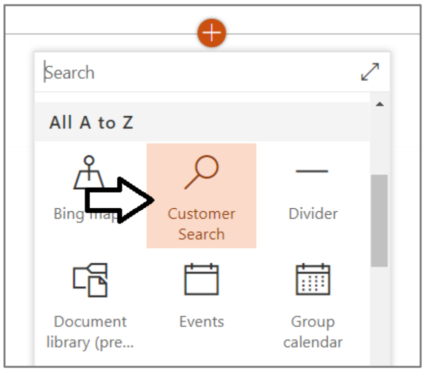
   c) On the new modern page, enter a title of Test Page and click the X to remove the banner background image.



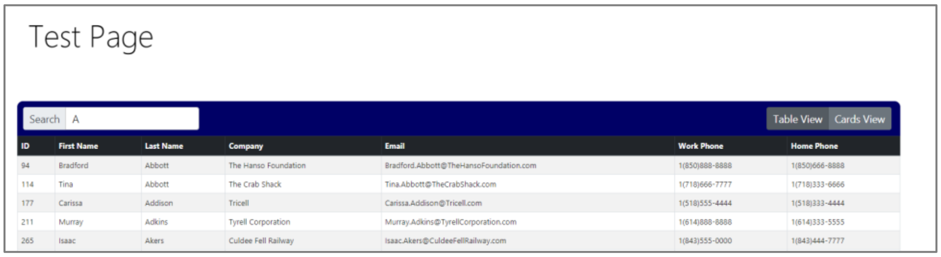
   d) Click the + sign button to add a webpart.



   e) Locate the **Customer Search** webpart and add it to the page.



f) The webpart should appear and be functional on the page



Test Page

Search A

Table View Cards View

ID	First Name	Last Name	Company	Email	Work Phone	Home Phone
94	Bradford	Abbott	The Hanso Foundation	Bradford.Abbott@TheHansoFoundation.com	1(850)888-8888	1(850)666-8888
114	Tina	Abbott	The Crab Shack	Tina.Abbott@TheCrabShack.com	1(718)666-7777	1(718)333-6666
177	Carissa	Addison	Tricell	Carissa.Addison@Tricell.com	1(518)555-4444	1(518)333-4444
211	Murray	Adkins	Tyrell Corporation	Murray.Adkins@TyrellCorporation.com	1(614)888-8888	1(614)333-5555
265	Isaac	Akers	Culdee Fell Railway	Isaac.Akers@CuldeeFellRailway.com	1(843)555-0000	1(843)444-7777

g) Save the modern page so you can return later and see this page with the Customer Search webpart.

Exercise 3: Build and Deploy a Solution Package with an Application Customizer

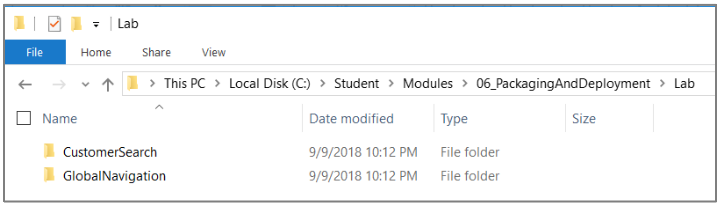
In this exercise you will go through the steps to build a solution package with an application customizer for distribution.

6. Open the SharePoint Framework project named **GlobalNavigation**.

a) Using Windows Explorer, navigate to the lab folder for this module at the following path.

```
C:\Student\Modules\06_PackagingAndDeployment\Lab
```

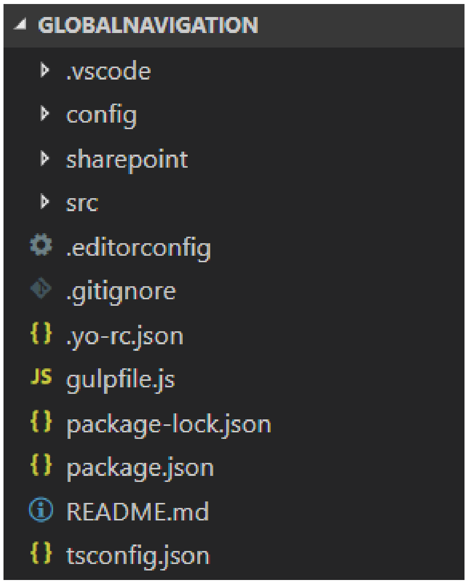
b) You should see two folders with SharePoint Framework projects named **CustomerSearch** and **GlobalNavigation**.


Lab
File
Home
Share
View
This PC > Local Disk (C:) > Student > Modules > 06_PackagingAndDeployment > Lab

Name	Date modified	Type	Size
CustomerSearch	9/9/2018 10:12 PM	File folder	
GlobalNavigation	9/9/2018 10:12 PM	File folder	

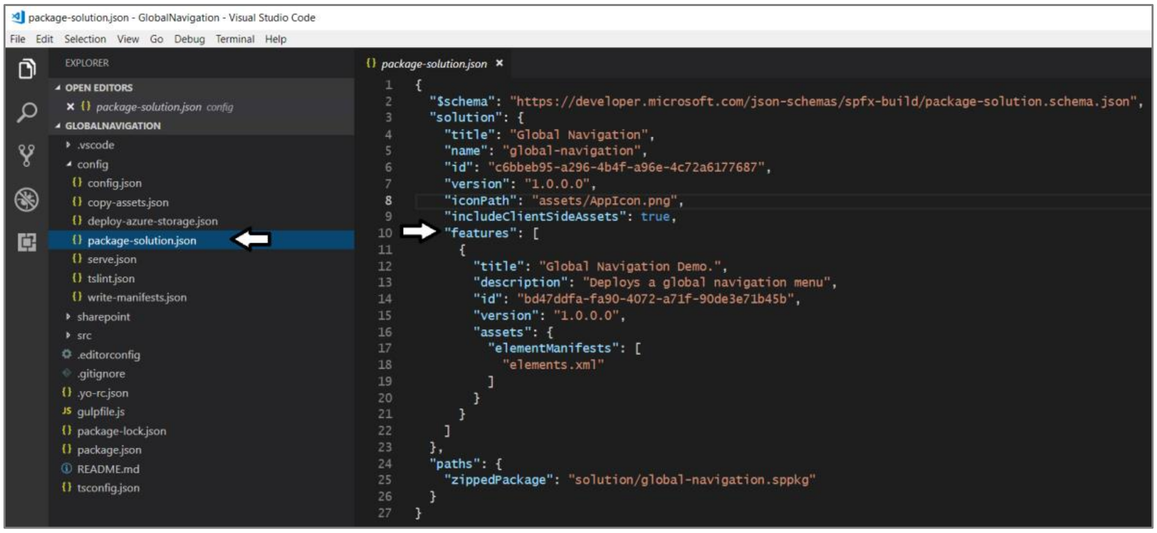
c) Open the folder named **GlobalNavigation** with Visual Studio Code.

d) Take a moment to inspect the files and folder inside the project.



e) Inside the config folder, locate and open the configuration file named **package-solution.json**.

f) Review the child properties of the **solution** property in **package-solution.json**. There is no need to make any edits to this file.



```json
{
  "$schema": "https://developer.microsoft.com/json-schemas/spfx-build/package-solution.schema.json",
  "solution": {
    "title": "Global Navigation",
    "name": "global-navigation",
    "id": "c6bbeb95-a296-4b4f-a96e-4c72a6177687",
    "version": "1.0.0.0",
    "iconPath": "assets/AppIcon.png",
    "includeClientSideAssets": true,
    "features": [
      {
        "title": "Global Navigation Demo.",
        "description": "Deploys a global navigation menu",
        "id": "bd47ddfa-fa90-4072-a71f-90de3e71b45b",
        "version": "1.0.0.0",
        "assets": {
          "elementManifests": [
            "elements.xml"
          ]
        }
      }
    ]
  },
  "paths": {
    "zippedPackage": "solution/global-navigation.sppkg"
  }
}
```

Note the absence of the **skipFeatureDeployment** property. This solution must be installed individually for each site collection.

7. Run npm install to restore the require npm packages to the project.

a) Use the **View > Integrated Terminal** menu command to display the Integrated Terminal.

b) Locate the console of the **Integrated Terminal** where you can type in and execute **npm** commands.

c) Run the npm install command.

```
npm install
```

Once you have restored the npm packages, you can now build the solution into a distribution package.

8. Build the solution into a package for distribution.

a) From the Terminal console, execute the gulp build command.

```
gulp build
```

b) When you execute the **gulp build** command, you will notice that it adds a new folder to the project named **lib**.

c) Bundle the solution by executing the following on the command line:

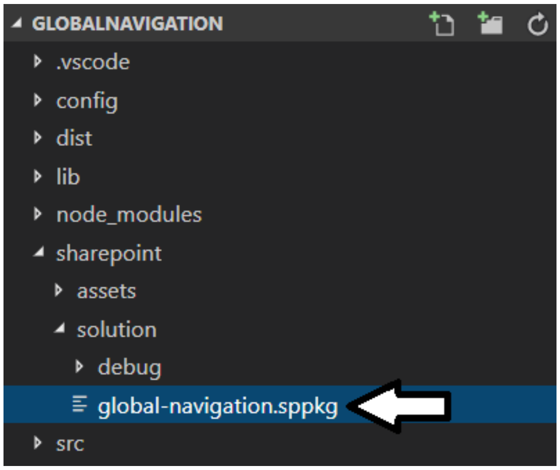
```
gulp bundle --ship
```

d) When you execute the **gulp bundle** command, you will notice that it adds a new folder to the project named **dist**.

e) Package the solution by executing the following on the command line:

```
gulp package-solution --ship
```

f) When you execute the **gulp package-solution**, the command generates a solution package named **global-navigation.sppkg** in the **sharepoint/solution/debug** folder.



Now you have created the solution package you need to publish to the app catalog.

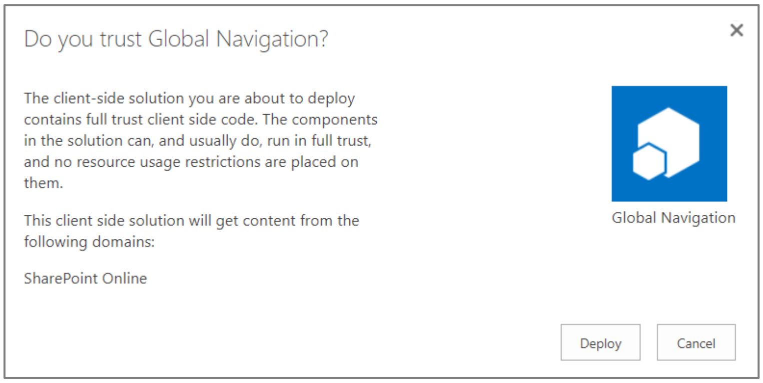
9. Deploy and trust the SharePoint package:

a) In the browser, navigate to your SharePoint Online App Catalog.

b) Select the **Apps for SharePoint** link in the navigation:

c) Drag the package from **\sharepoint\solution\global-navigation.sppkg** into the **Apps for SharePoint** library.

d) In the **Do you trust global-navigation?** dialog, select **Deploy**.

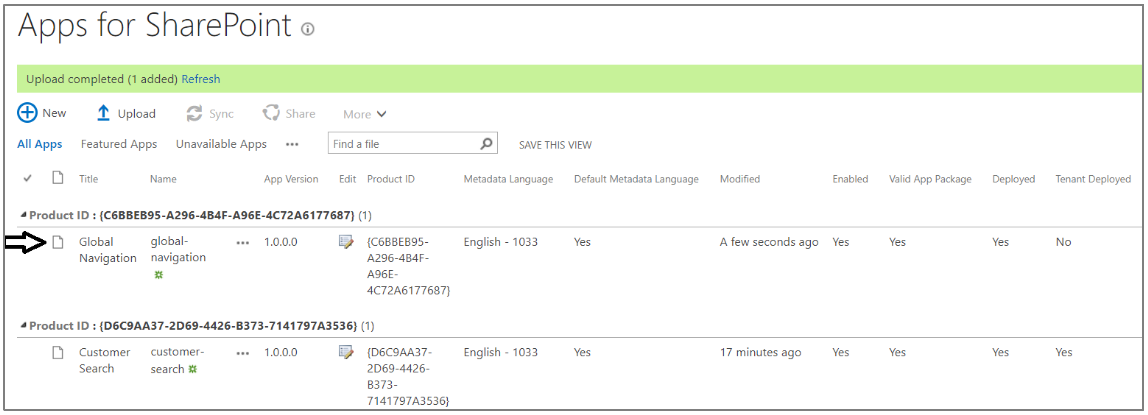

Do you trust Global Navigation?

The client-side solution you are about to deploy contains full trust client side code. The components in the solution can, and usually do, run in full trust, and no resource usage restrictions are placed on them.

This client side solution will get content from the following domains:

SharePoint Online

e) You should be able to verify that the solution package has been installed.



Apps for SharePoint

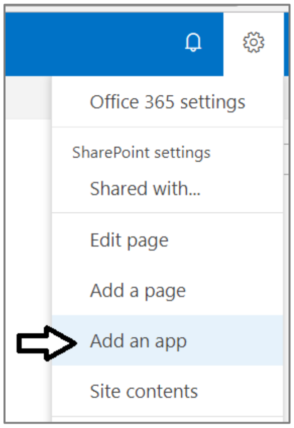
Upload completed (1 added) Refresh

Title	Name	App Version	Edit	Product ID	Metadata Language	Default Metadata Language	Modified	Enabled	Valid App Package	Deployed	Tenant Deployed
Product ID : {C6BBEB95-A296-4B4F-A96E-4C72A6177687} (1)											
Global Navigation	global-navigation	1.0.0.0		{C6BBEB95-A296-4B4F-A96E-4C72A6177687}	English - 1033	Yes	A few seconds ago	Yes	Yes	Yes	No
Product ID : {D6C9AA37-2D69-4426-B373-7141797A3536} (1)											
Customer Search	customer-search	1.0.0.0		{D6C9AA37-2D69-4426-B373-7141797A3536}	English - 1033	Yes	17 minutes ago	Yes	Yes	Yes	Yes

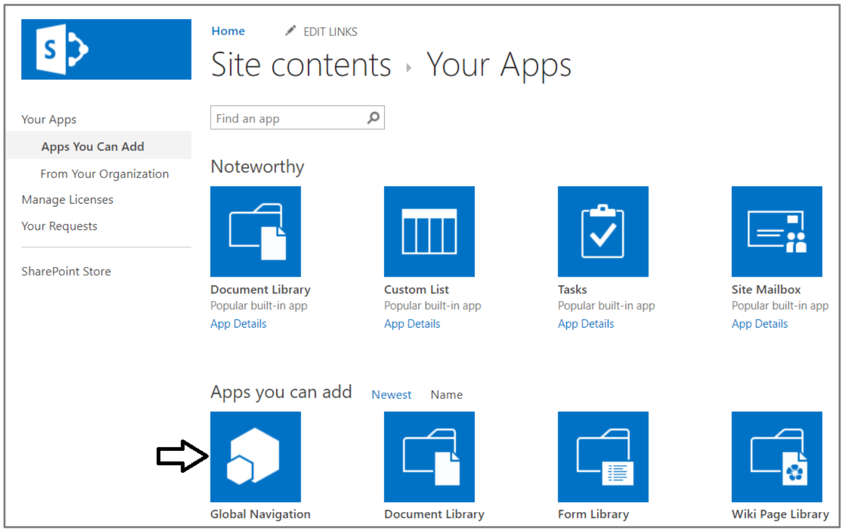
10. Install the **global-navigation** solution in a SharePoint site.

    a) Navigate to the root SharePoint site in your Office 365 tenant.

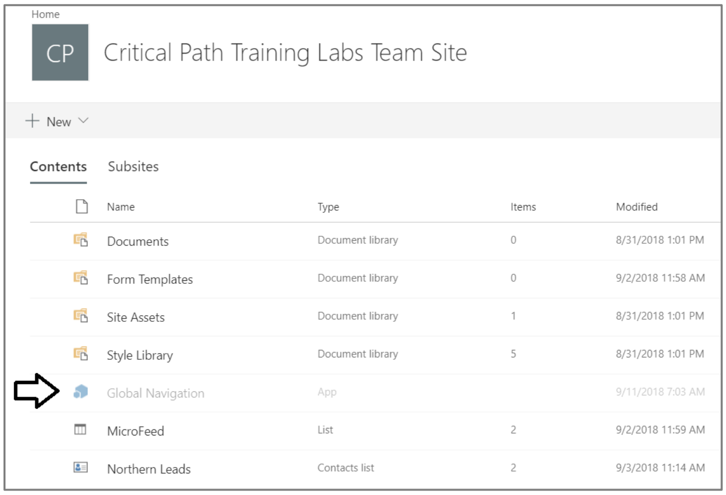
    b) From the **Site Actions** menu, select **Add an app** to install a new solution into the current site collection.



    c) Locate and click on the solution package named Global Navigation to begin the installation process.



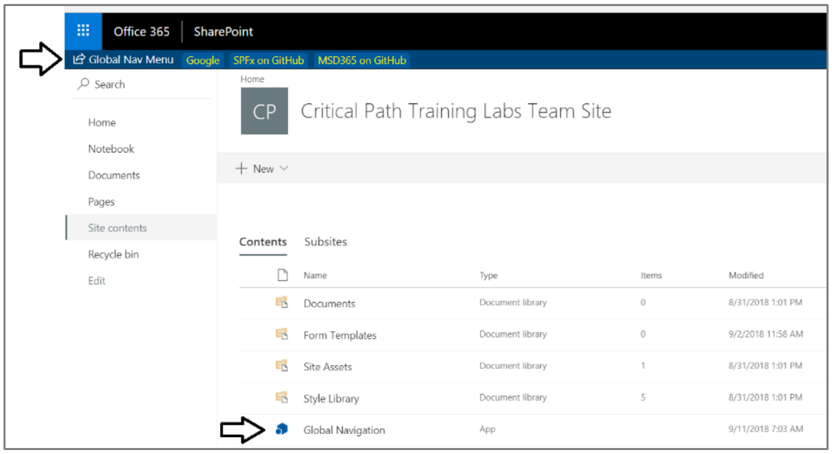
    d) On the **Site Contents** page, you should see the new solution package appear in a greyed out state while it is installing.



Name	Type	Items	Modified
Documents	Document library	0	8/31/2018 1:01 PM
Form Templates	Document library	0	9/2/2018 11:58 AM
Site Assets	Document library	1	8/31/2018 1:01 PM
Style Library	Document library	5	8/31/2018 1:01 PM
Global Navigation	App		9/11/2018 7:03 AM
MicroFeed	List	2	9/2/2018 11:59 AM
Northern Leads	Contacts list	2	9/3/2018 11:14 AM

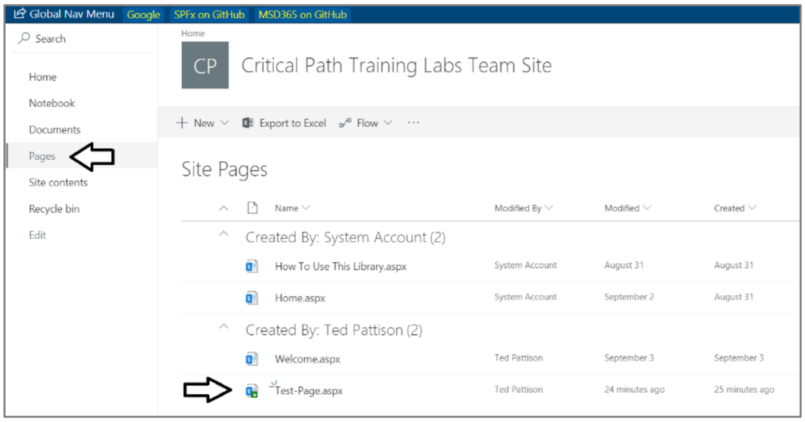
e) One the installation is done, you should see the icon for the solution package is no longer greyed out.

f) You should also see that a global navigation menu added by an application customer appears at the top of the page.



Name	Type	Items	Modified
Documents	Document library	0	8/31/2018 1:01 PM
Form Templates	Document library	0	9/2/2018 11:58 AM
Site Assets	Document library	1	8/31/2018 1:01 PM
Style Library	Document library	5	8/31/2018 1:01 PM
Global Navigation	App		9/11/2018 7:03 AM

g) Navigate to the default view for the **Pages** document library. Due to the fact that the default view of the Pages library is a modern page, you should see that the global navigation continues to be displayed on this page as well.

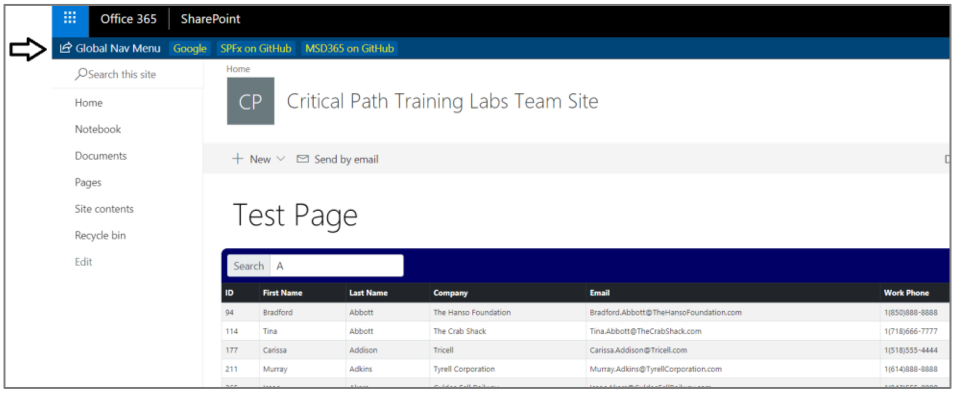


Name	Modified By	Modified	Created
Created By: System Account (2)			
How To Use This Library.aspx	System Account	August 31	August 31
Home.aspx	System Account	September 2	August 31
Created By: Ted Pattison (2)			
Welcome.aspx	Ted Pattison	September 3	September 3
Test-Page.aspx	Ted Pattison	24 minutes ago	25 minutes ago

Now you will go to the site page you create in the previous exercise to see the application customer from the Global Navigation solution page appear on the same page as the Customer Search webpart created from the customer-search solution package.

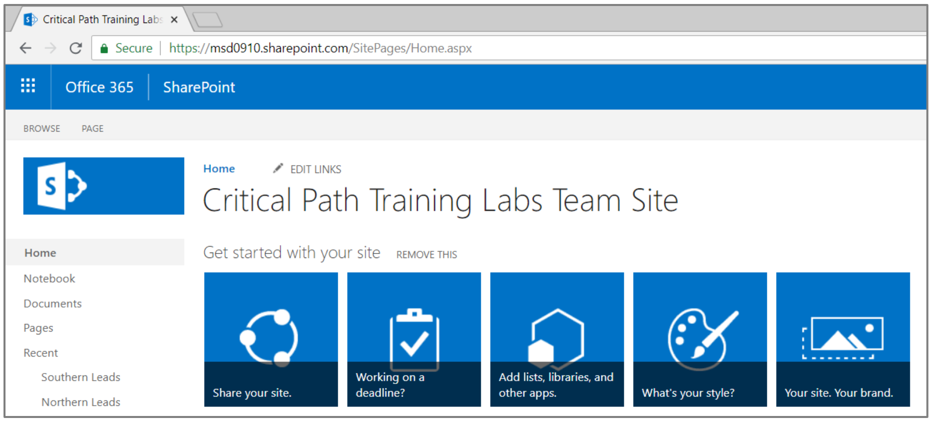
h) Navigate to the test site page you created earlier when testing the webpart in exercise 2.

i) You should see both the webpart and the application customizer appear on the same page.



ID	First Name	Last Name	Company	Email	Work Phone
94	Bradford	Abbott	The Hanso Foundation	Bradford.Abbott@TheHansoFoundation.com	1(850)888-8888
114	Tina	Abbott	The Crab Shack	Tina.Abbott@TheCrabShack.com	1(718)666-7777
177	Carissa	Addison	Tricell	Carissa.Addison@Tricell.com	1(518)555-4444
211	Murray	Adkins	Tyrell Corporation	Murray.Adkins@TyrellCorporation.com	1(614)888-8888

j) Navigate to the home page of the current site. Where is the menu provided by the application customizer?



Since the home page is a classic page, you will not see the application customizer appear. Therefore, application customizers are really something that requires a site to have modern pages.