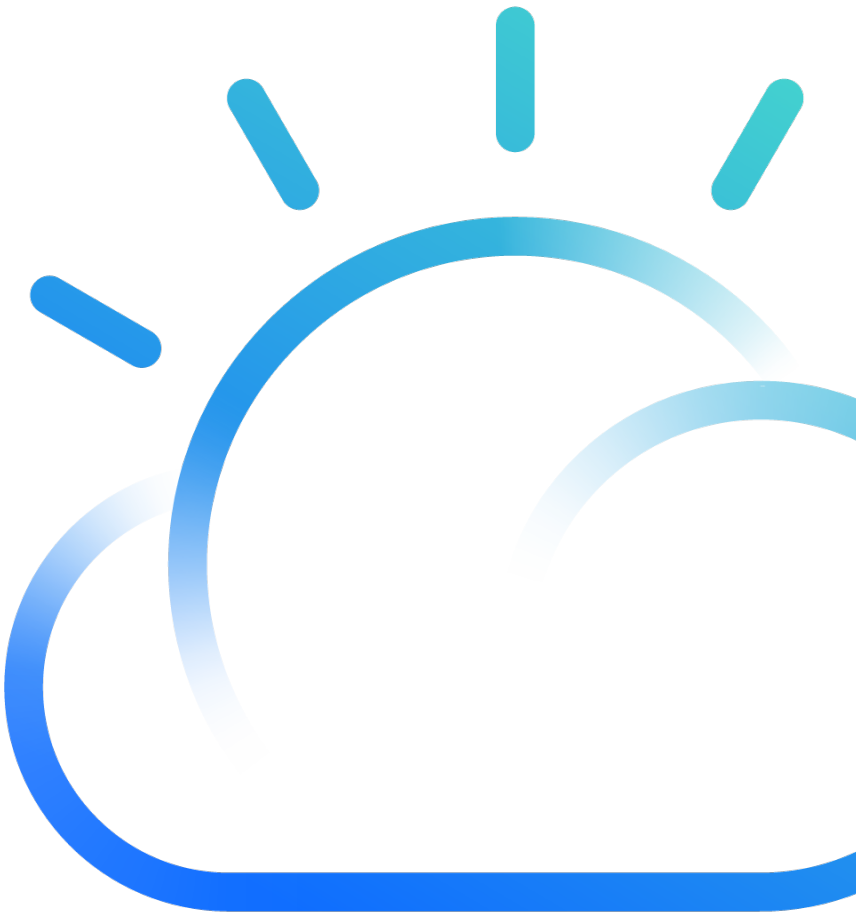
IBM Skills Academy

Acme Airline Cloud Adoption

Lab 2 Guide



Version 06.24.20

The information contained in this document has not been submitted to any formal IBM test and is distributed on an "as is" basis without any warranty either express or implied. The use of this information or the implementation of any of these techniques is a customer responsibility and depends on the customer's ability to evaluate and integrate them into the customer's operational environment. While each item may have been reviewed by IBM for accuracy in a specific situation, there is no guarantee that the same or similar results will result elsewhere. Customers attempting to adapt these techniques to their own environments do so at their own risk.

© Copyright International Business Machines Corporation 2019.
This document may not be reproduced in whole or in part without the prior written permission of IBM.
US Government Users Restricted Rights - Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

Contents

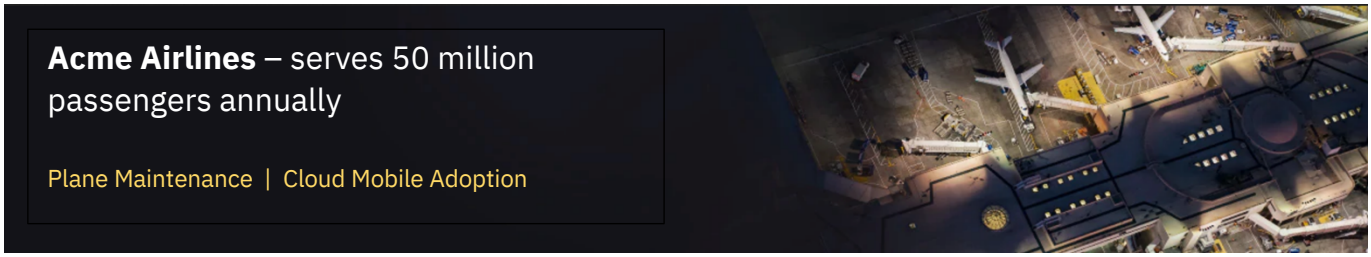
PREFACE **4**
INDUSTRY USE-CASE 4
SOLUTION OVERVIEW 5
OBJECTIVES 6
TOOLS 7
PREREQUISITES 7
MILESTONE 1. PREPARE YOUR ENVIRONMENT **8**
CASE STUDY 8
INSTALL THE IBM DIGITAL APP BUILDER 8
MILESTONE 2. CREATING AN APP **9**
CASE STUDY 9
CREATING AN APP 9
MILESTONE 3. DEVELOPING AN APPLICATION **18**
CASE STUDY 18
PROJECT EXPLORER 18
MILESTONE 4. ACME BUSINESS CASE – PREPARING THE APP **21**
CASE STUDY 21
FIRST CLOUD APPLICATION 21
TEST THE APPLICATION RUNNING IN A BROWSER 27

Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

Preface

Industry Use-Case

Acme Airlines – Company Profile



Acme Airlines a flagship national carrier was founded 50 years ago and now operates on five continents, with numerous daily flights between domestic and international destinations.

The company employs approximately 25,000 employees around the world with staff in most major airports and serves an estimated 50 million passengers annually.

Acme Airlines prides itself on operational efficiency and outstanding customer service, and it has consistently generated high profits by offering low-cost, high-quality services to passengers. But, as with all airlines, the company must continuously improve profitability by gaining economic efficiencies, and despite being a traditional organization, the competitive passenger transportation industry is forcing the airline to seek new ways to differentiate itself from the competition. At the same time, it must handle increasing fuel prices and maintain the kind of quality customer service that helps ensure high passenger demand.

Business challenge

Acme Airlines Aircraft maintenance is a crucial part of keeping planes in the air and passengers safe, technicians are under immense pressure to fix problems as quickly as possible to avoid flight delays and cancellations. But human capacity is limited.

At Acme Airlines, 2,000 technicians handle 170,000 maintenance cases every year, keeping extensive manual written records on equipment malfunctions, corrective actions and routine work as reference points for diagnosis and problem solving.

Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

Planes have scheduled maintenance checks that are to be followed strictly to avoid failing to detect equipment malfunction in time, but is often difficult for staff technicians to know which specific sections of the plane requires additional inspection after a sensor alert was triggered during a heavy storm.

Most of the data was unstructured and accessible only through keyword search; therefore, technicians had to know where to look, what to look for and how to recognize the right answer when they found it.

As a result, the process was slow and often yielded inaccurate or incomplete insights. *Acme Airlines needed a way to optimize the plane maintenance workorders to enable its aircraft technicians to understand and solve problems quickly*, knowing exactly what needed to be done for every plane that arrived at the maintenance hangar.

Solution Overview

Acme Airlines Maintenance Repair Operations (MRO) decided to adopt a digital approach for plane maintenance workorders, providing technicians with a smartphone and a mobile application that leverages cloud APIs, with the promise to show in real-time the maintenance requests for their planes, track their mechanics progress, and predict the availability of the planes in their fleet around the globe.

Project Team

Bob

Project Leader

MRO Strategy & Optimization

Bob – is MRO Strategy and Optimization Project Leader, he is the right hand of the MRO Vice President and has been in Acme Airlines for 20 years, he saw the organization grow and understands the importance of optimizing the operations for maintenance and repairs of their global fleet, he is aware of the current challenges their repair technicians are facing as he started on that role, and many of his former collages are still working on that position, so he took charge personally of this project and is very passionate about seeing it succeed.

Sheila

Cloud Apps Builder

MRO Strategy and Optimization

Sheila – She is new to technology, but she is familiar with the operations within the MRO department as she used to be an assistant secretary for an executive within the MRO organization and her husband works as a hangar technician inspecting planes.

Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

She is new to technology but recently she has taken several courses on cloud application design and development and is looking for a career change. *Bob* just hired her as a cloud applications builder, and she is eager to evaluate different technologies that could be used to create an MRO mobile application leveraging cloud technologies, she hopes that this mobile application will make the life of the repair technicians easier, her husband among them.

After doing some research Sheila validated that there are several low-code/no-code tools now available in the market that can be used to quickly pilot a prototype application and decided to give it a try with her top pick – the IBM Digital App Builder.

Objectives

By the end of this lab you will have learned how to design and develop Acme Airlines first pilot mobile application for Maintenance Repair Operations using the IBM Digital App Builder IDE (Interface Development Environment).

The IBM Digital App Builder (called "*Builder*" for short) is used in this lab by *Sheila* to allow the rapid development of prototype cloud-powered mobile application. The *Builder* offers a drag-and-drop experience to build the applications with no specialized software development skills, demonstrating that non-IT professionals inside business units within the enterprise can easily leverage low-code / no-code tools like *Builder*, to automate and optimize business operations without the direct involvement of their IT departments.

Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

Tools

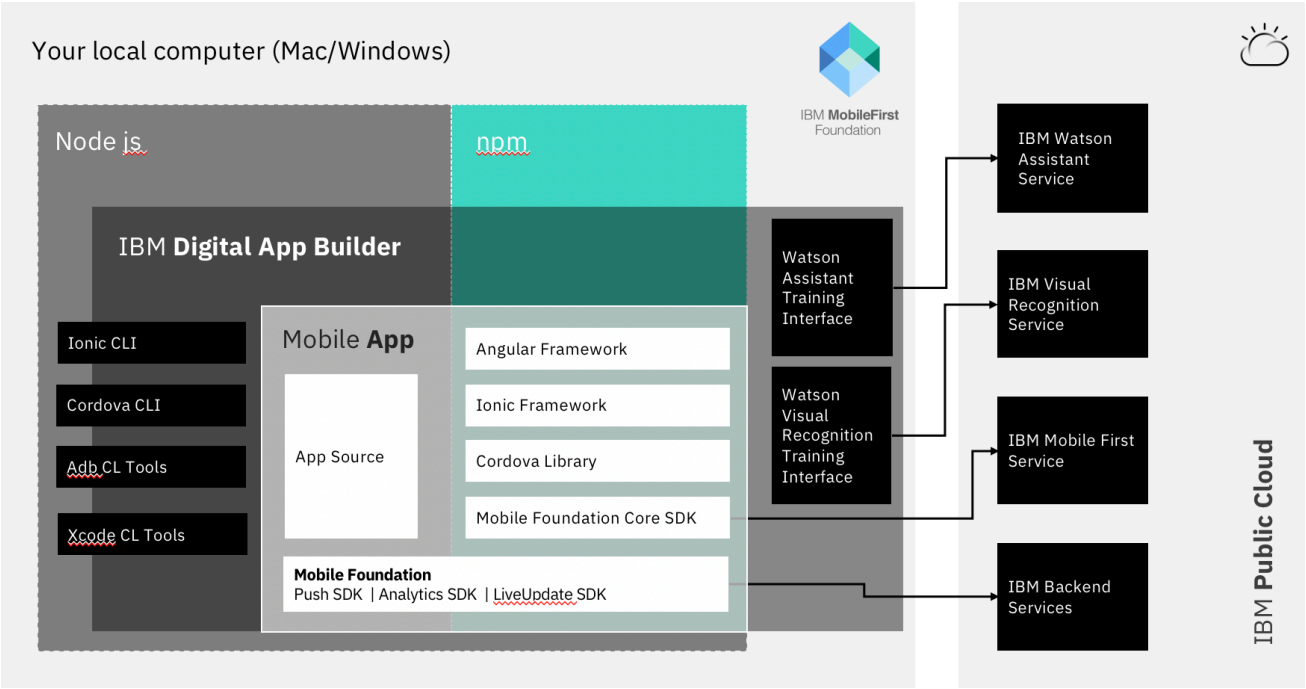
- IBM Cloud
- IBM Digital App Builder (DAB)

DAB

IBM Digital App Builder® is a low-code tool, which helps to quickly create mobile, web and PWA (Progressive Web App) multi-channel applications with AI capabilities powered by Watson services. The apps created using the Digital App Builder leverage IBM Mobile Foundation V8 (on-prem or cloud) for security, backend connectivity, and analytics.

You can access IBM Digital App Builder for free, no need for an IBM Cloud account, just download and play

The graphic below depicts the architecture of the Digital App Builder tool:



For more information and some additional tutorials go to ->
https://mobilefirstplatform.ibmcloud.com/tutorials/en/foundation/8.0/digital-app-builder/

Prerequisites

To complete this lab you should have done all the steps described on the previous lab – *Lab 1*

If you have not installed Node.js and NPM please follow the link below and download the version appropriate for your operating system.

https://nodejs.org/en/download/

Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

Milestone 1. Prepare Your Environment

Case Study

Sheila

Cloud Apps Builder

MRO Strategy and Optimization

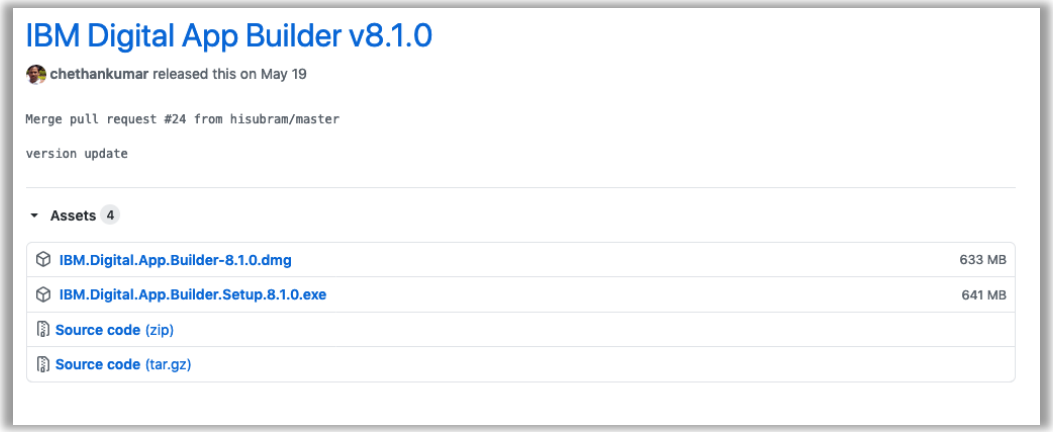
Sheila is now going to install the tool on her computer to start evaluating the capabilities of this tool and see if it she could use it to build the Cloud Application for her organization. She recognizes the value of having a local IDE on her laptop that can run offline and use it to quickly create a run series of prototypes through the technicians in the field that were selected as pilot users for this exercise.

Follow *Sheila* as she does the steps below to setup the tool on her computer:

Install the IBM Digital App Builder

To install the IBM Digital App Builder go to the link below:

https://github.com/MobileFirst-Platform-Developer-Center/Digital-App-Builder/releases



Download **Version 8.1.0**

For MacOS computers

Download the *.dmg* file and run the Installer

For Windows computers

Download the .exe file and run the Installer

Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

Milestone 2. Creating an App

Case Study

Sheila

Cloud Apps Builder

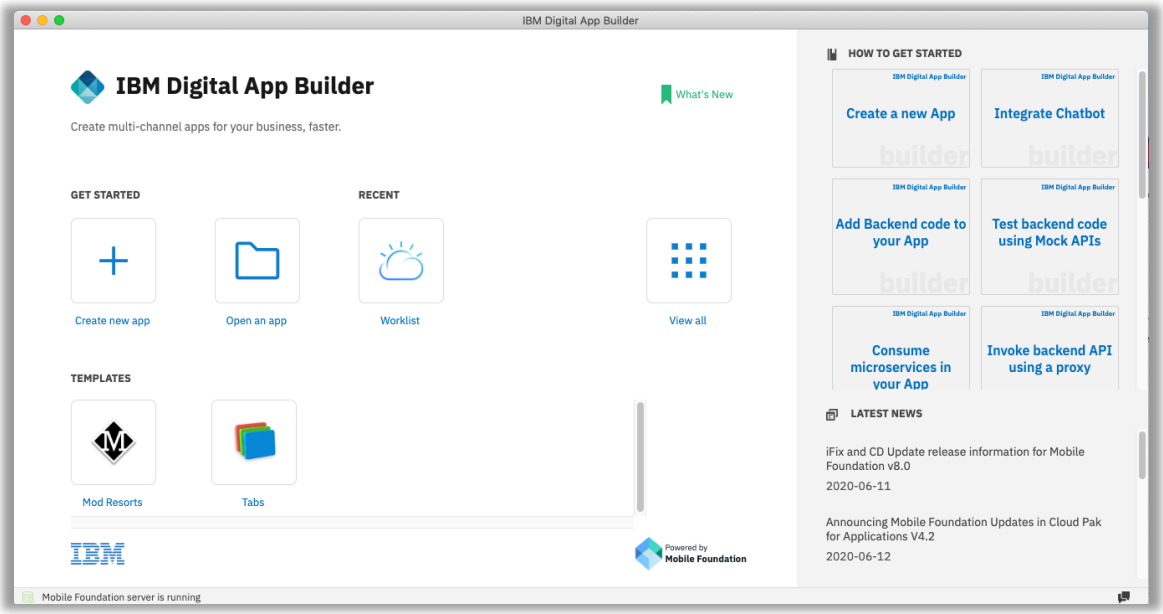
MRO Strategy and Optimization

Now that the tool has been installed. *Sheila* needs to create a new cloud application before starting to explore the different capabilities within the *Builder* tool.

Follow *Sheila* as she does the steps below to create a new application within the *Builder* IDE environment:

Creating an App

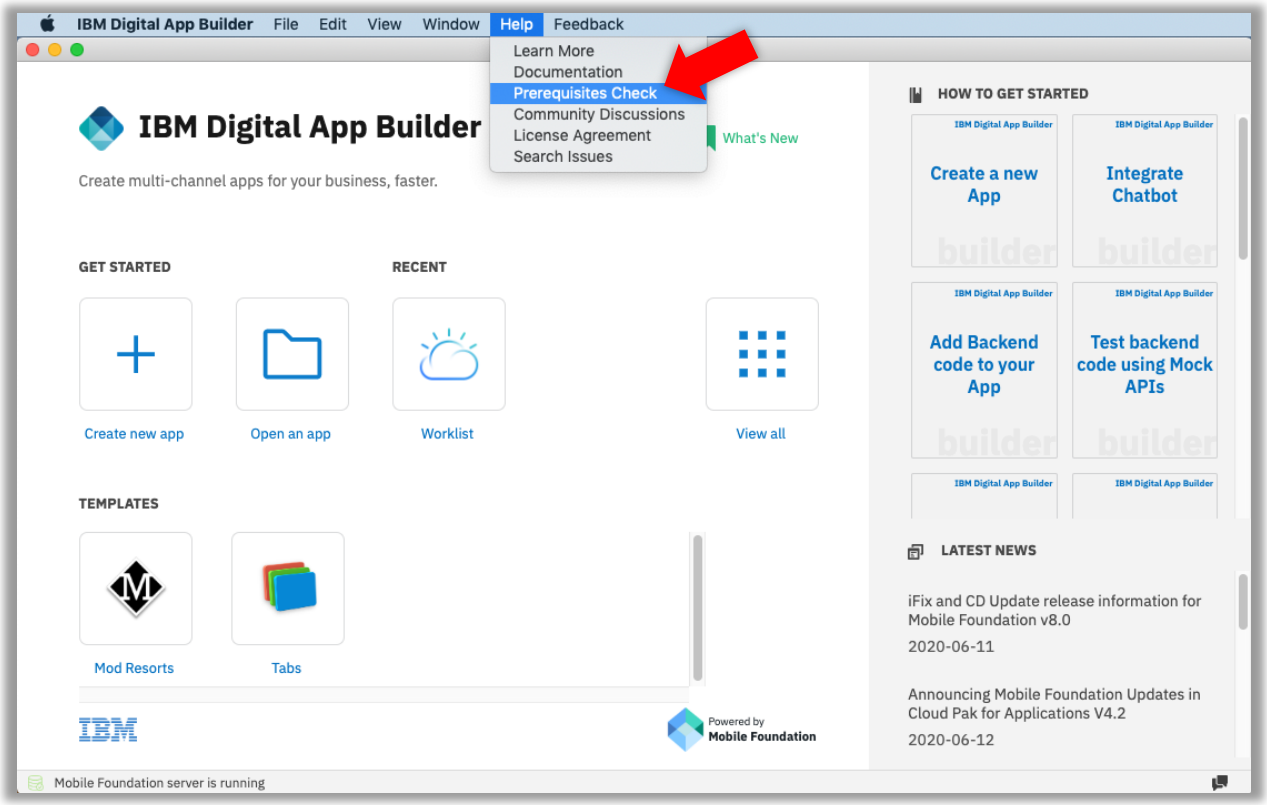
Once the Digital App Builder has finished installing, open the program. We will be using this tool, over the next five labs, in order to build a Cloud based application.



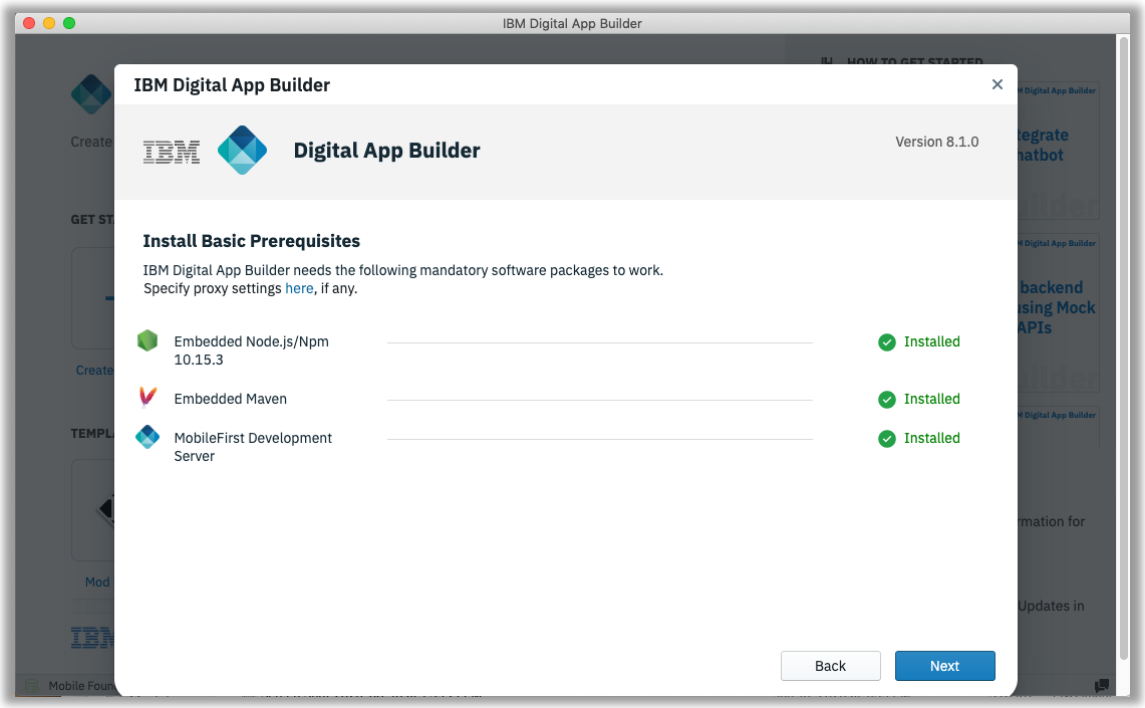
Before creating our new application, we first need to ensure we have the correct Prerequisites.

Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

1. Navigate to **Help** and then select **Prerequisites Check**.

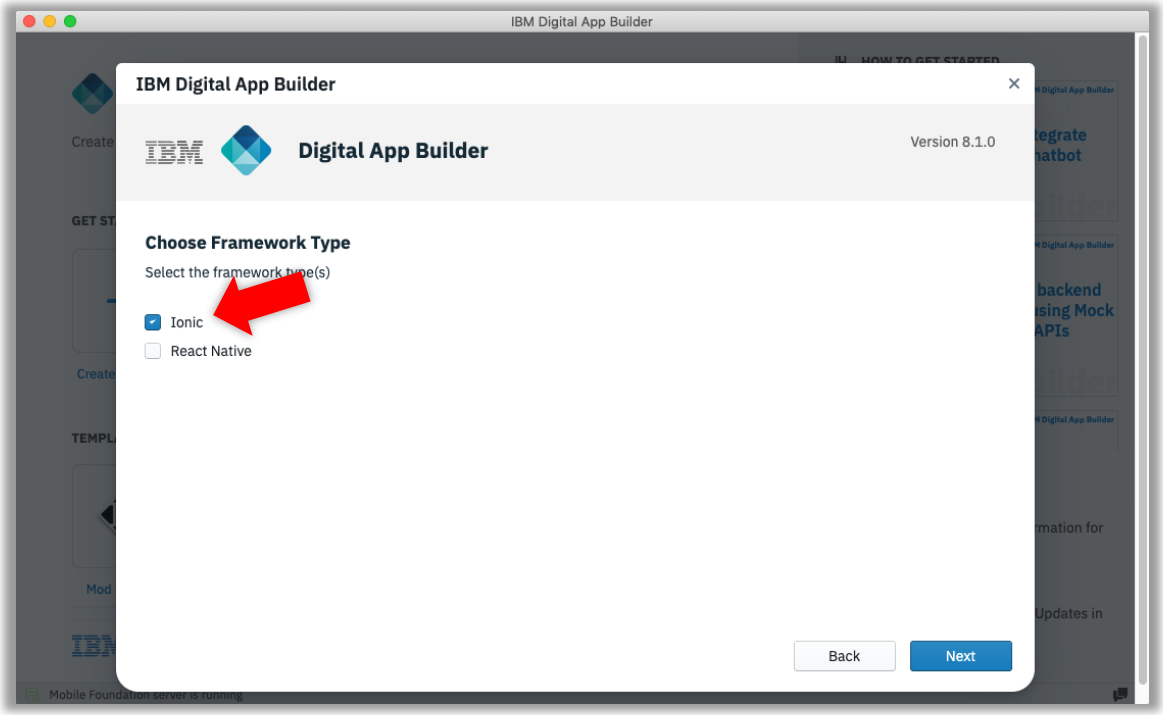


2. Ensure Embedded Nose.js/Npm, Embedded Maven, and the MobileFirst Development Server are all installed.

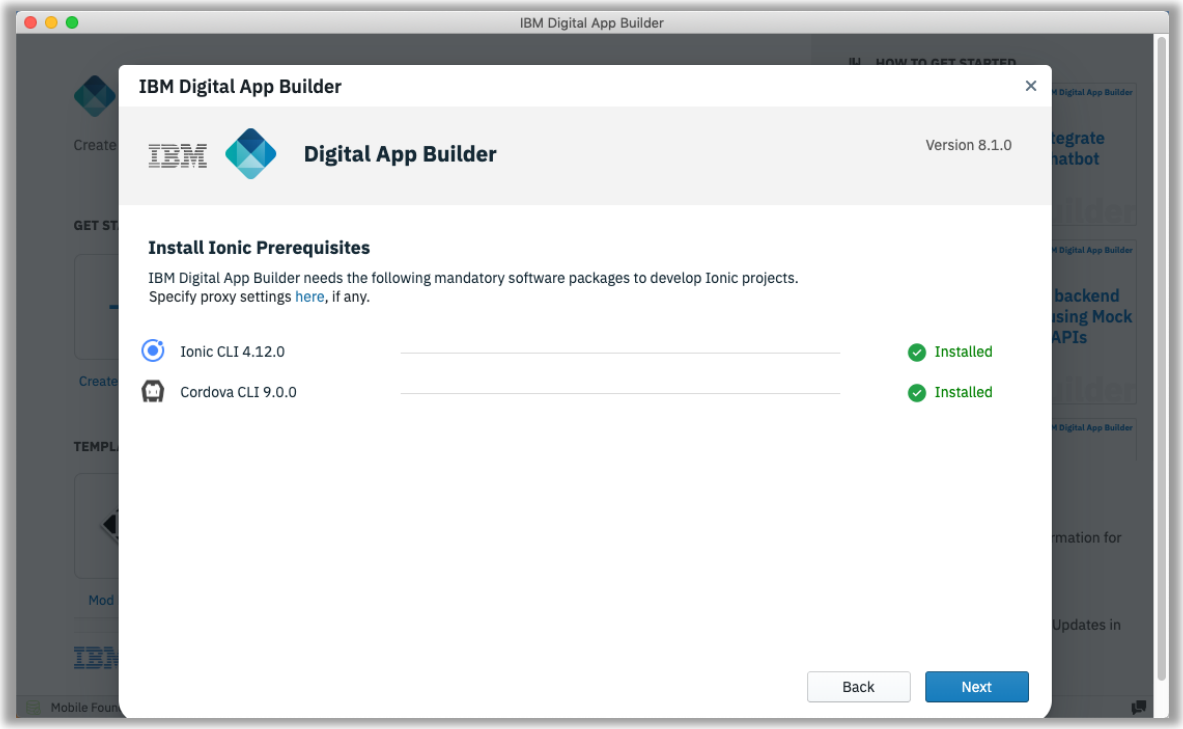


Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

3. Click **Next**.
4. For our Framework Type choose **Ionic** and then click **Next**.

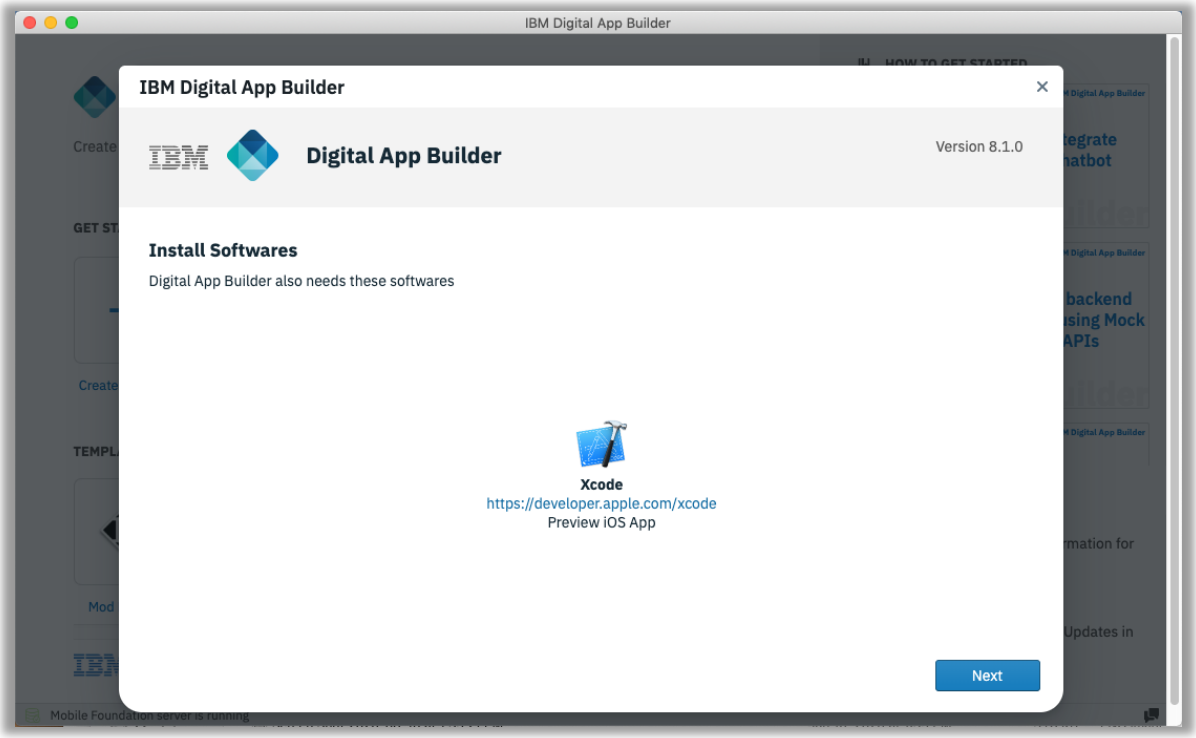


5. Ensure Ionic prerequisites (Ionic CLI 4.12.0 and Cordova CLI 9.0.0) have been installed and hit **Next**.

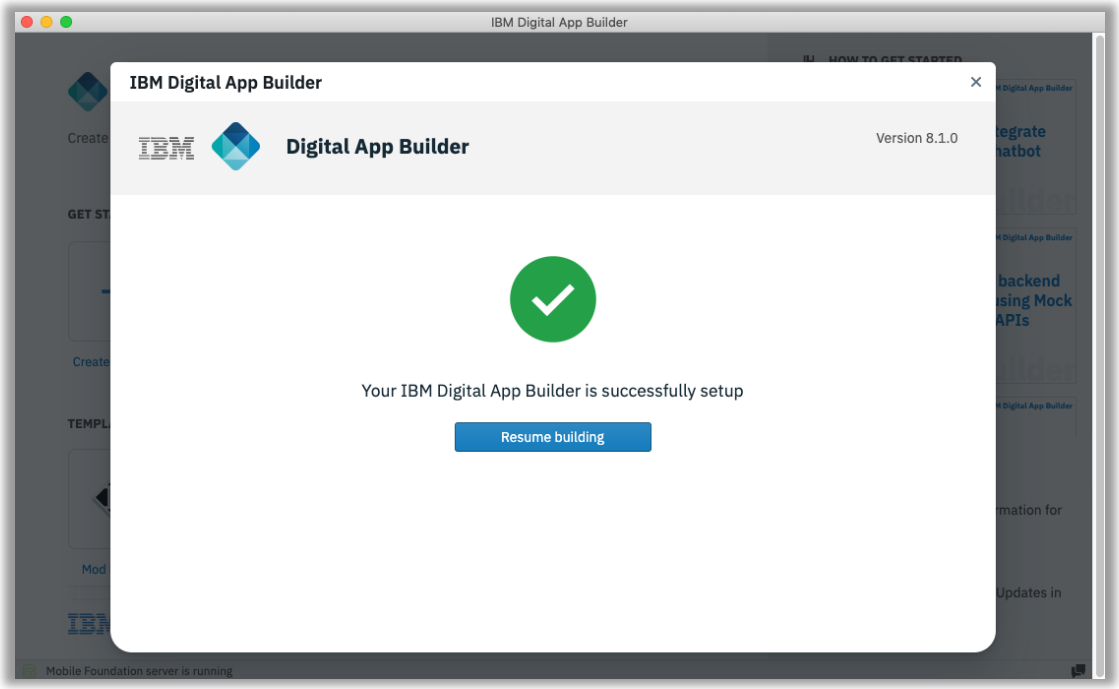


Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

6. Click **Next** to bypass XCode install. We will not need that service in order to Preview our environment.

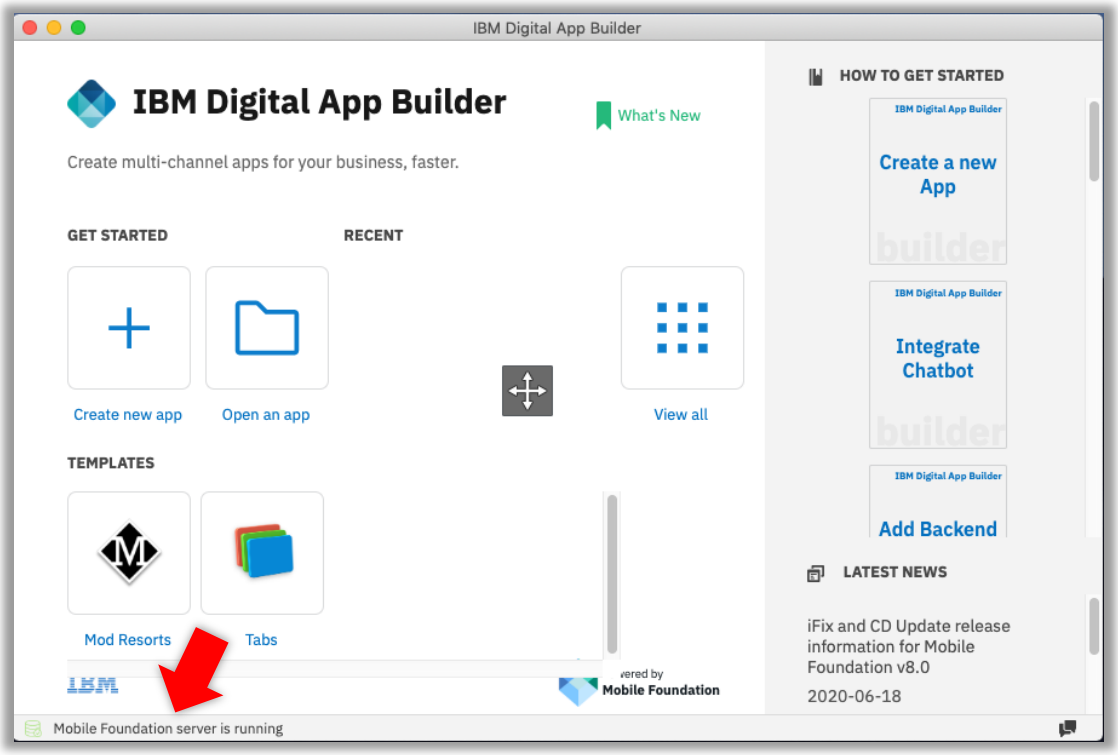


7. Now that our prerequisites have been verified click **Resume Building** and it is time to create our application.



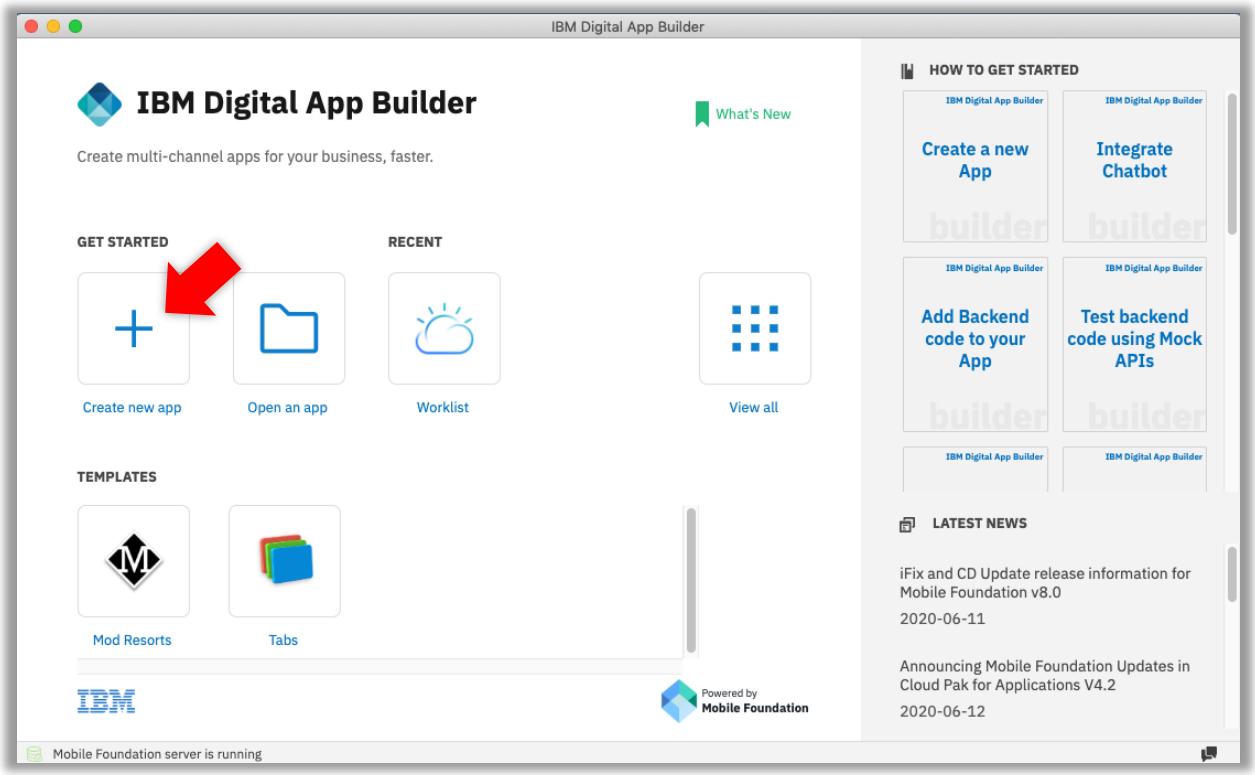
Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

8. Wait for the text , at the bottom left corner, to say **Mobile Foundation server is running**. This may take a few minutes.



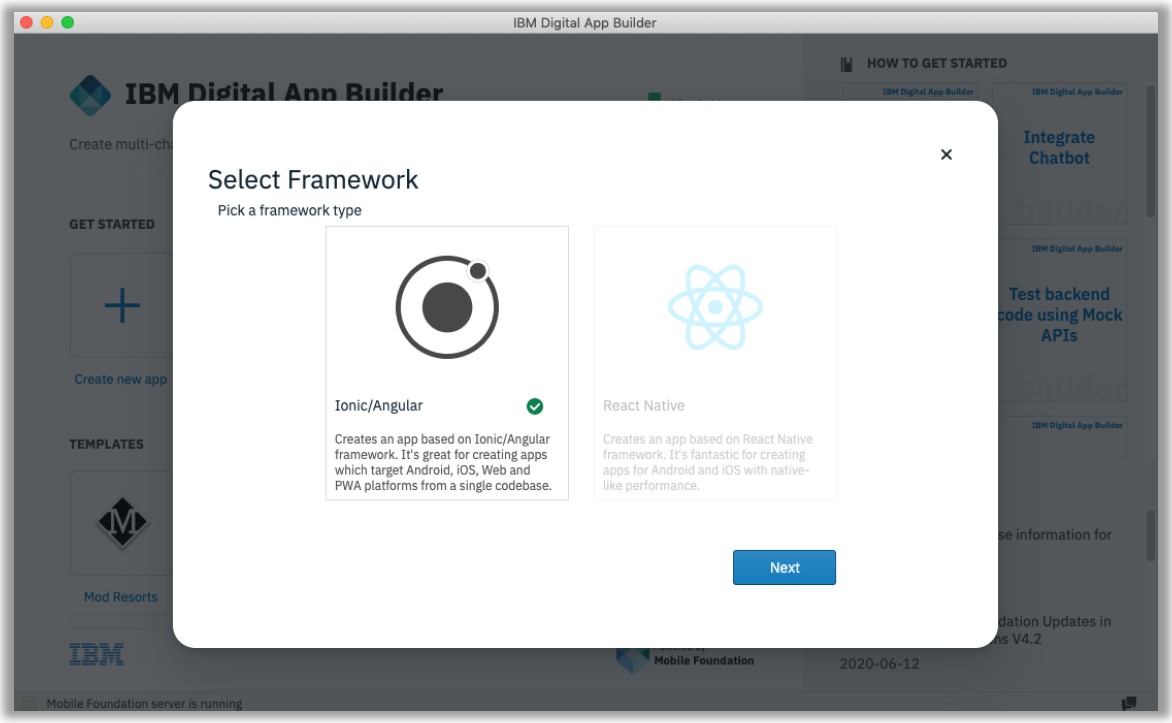
Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

9. Click **create new app**.



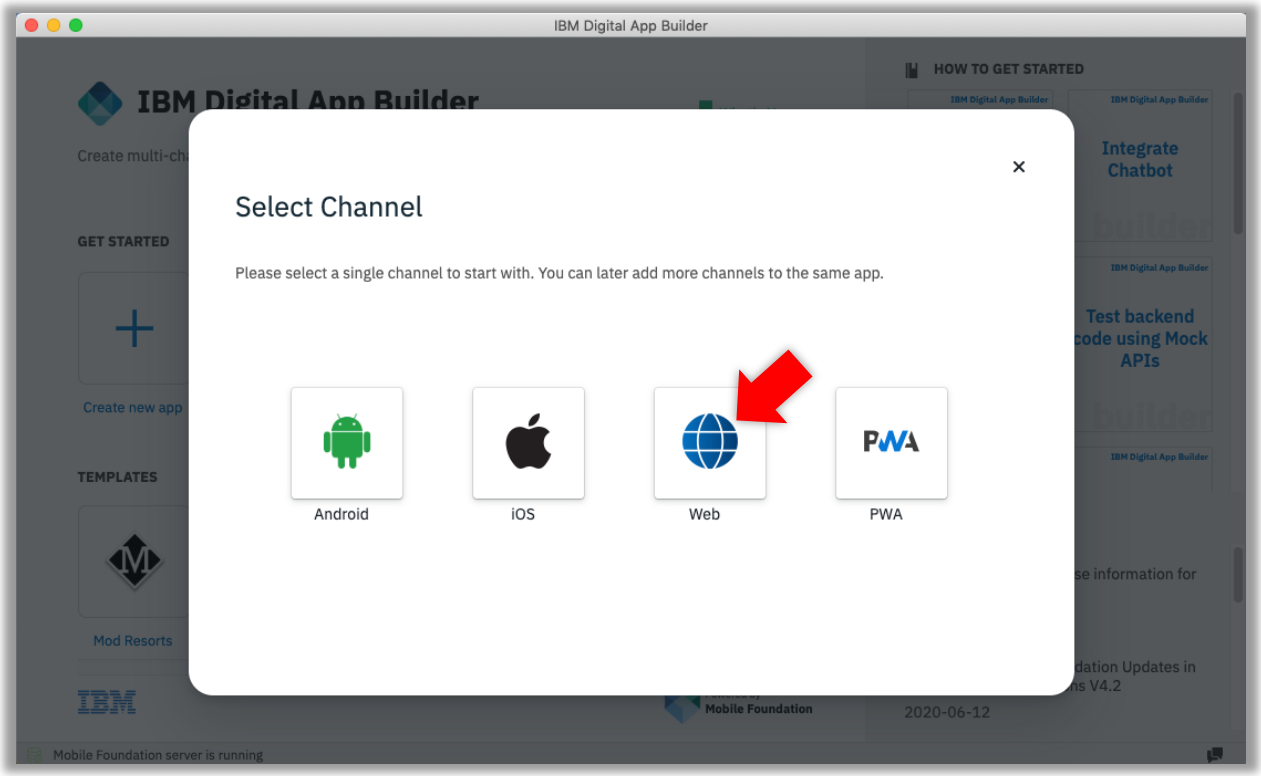
Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

10. Select the **Ionic/Angular Framework** and click **Next**.



At the next screen we will be asked to select a Channel, or a platform, that the app would be built for.

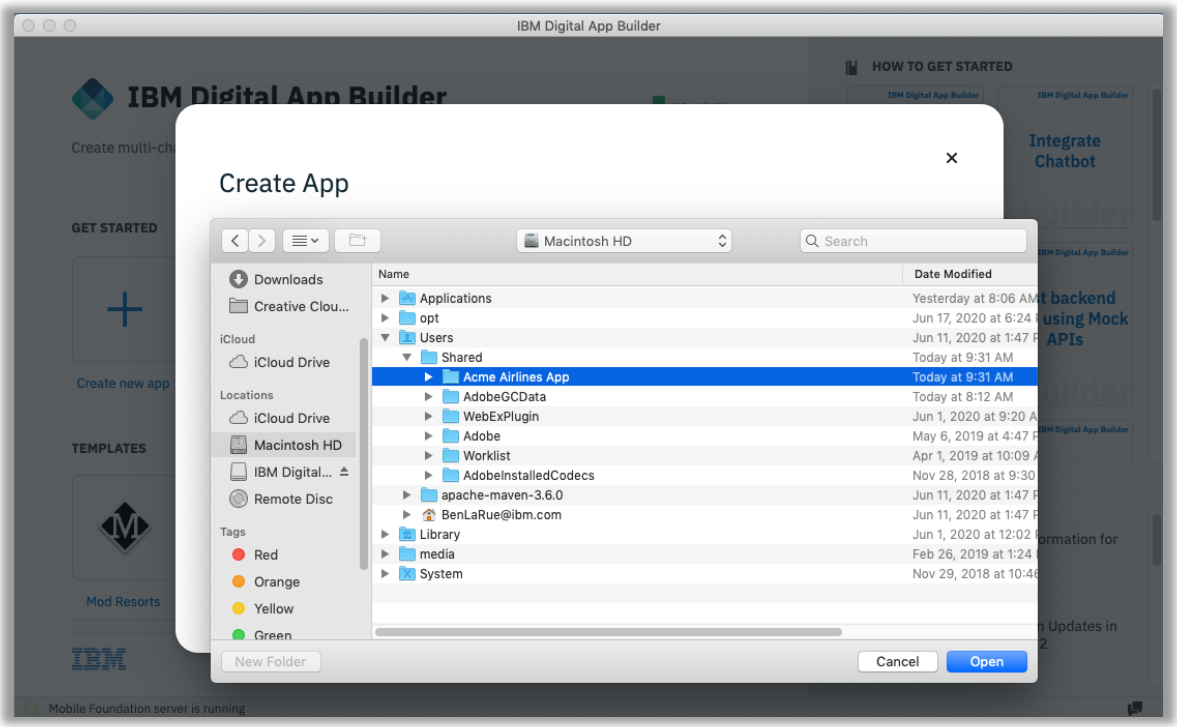
11. To start, select **Web**.



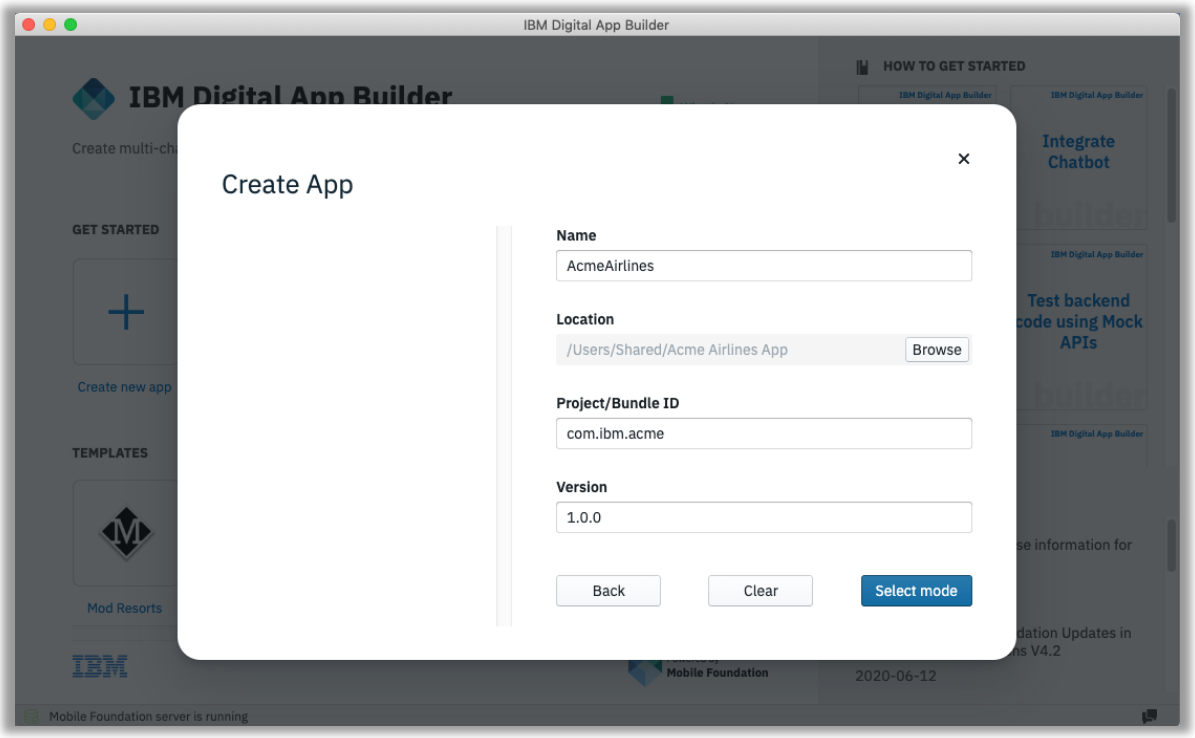
Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

Now it is time to Create our application.

12. For Name, enter **AcmeAirlines**.
13. For location, select **Browse**, navigate to your Shared folder, and then create a new folder named **Acme Airlines App**.

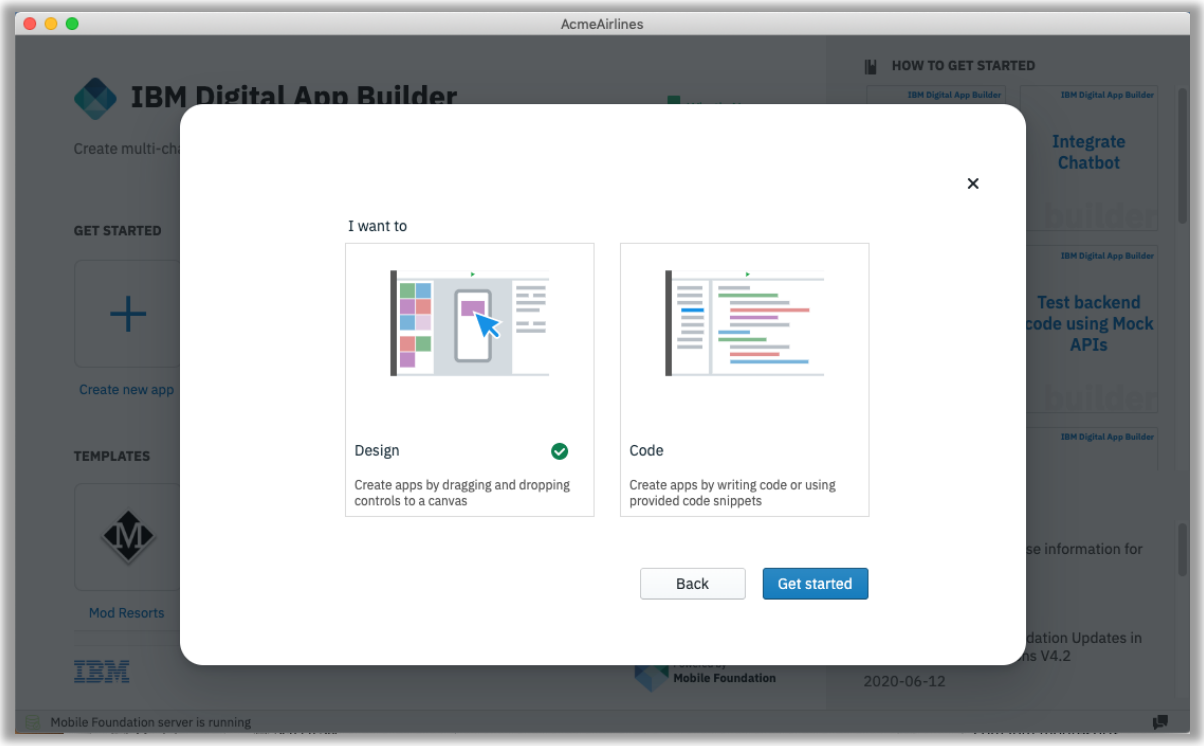


14. For Project/Bundle ID enter, **com.ibm.acme**.

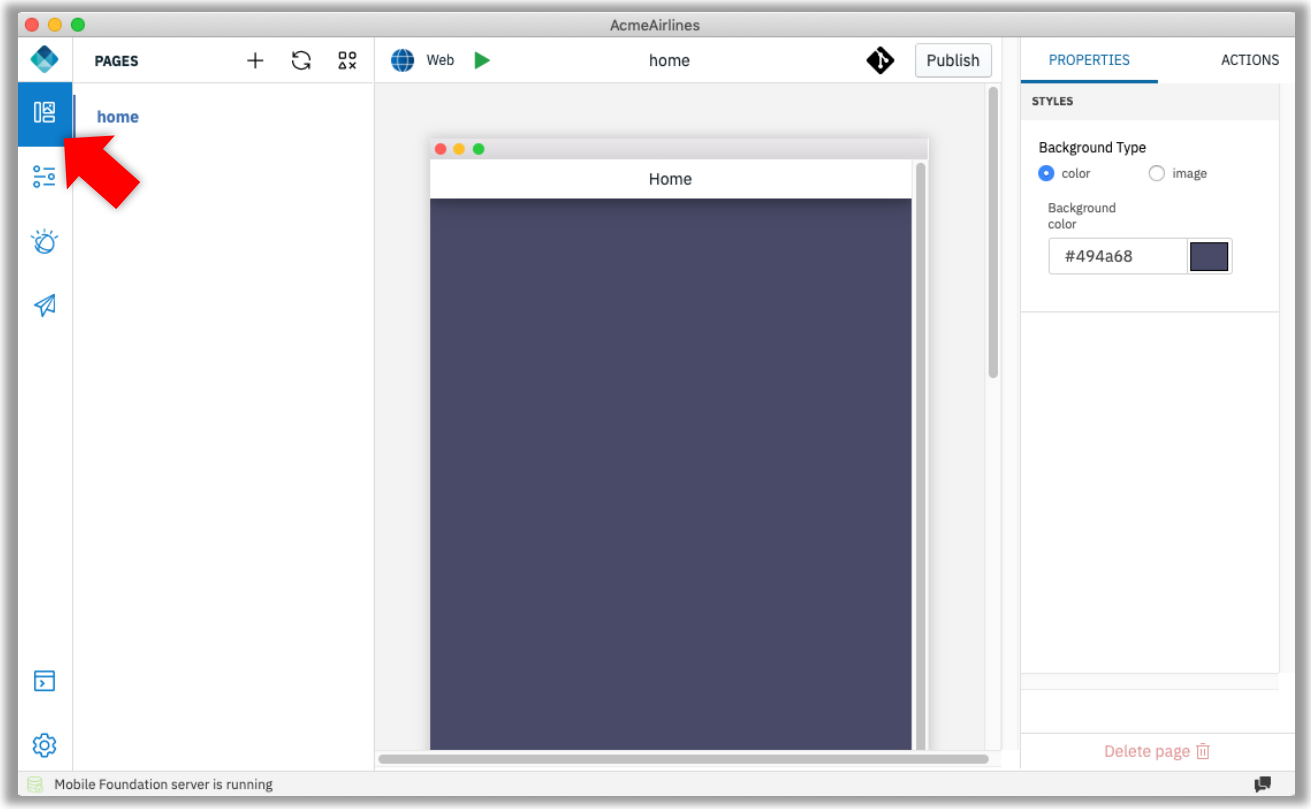


Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

15. And for Version, enter **1.0.0**. Then click on **Select mode**.
16. Choose **Design**, and then click **Get started**.



This displays the **Workbench** window. This is your workspace for creating a new application.



Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

Milestone 3. Developing an Application

Case Study

Sheila

Cloud Apps Builder

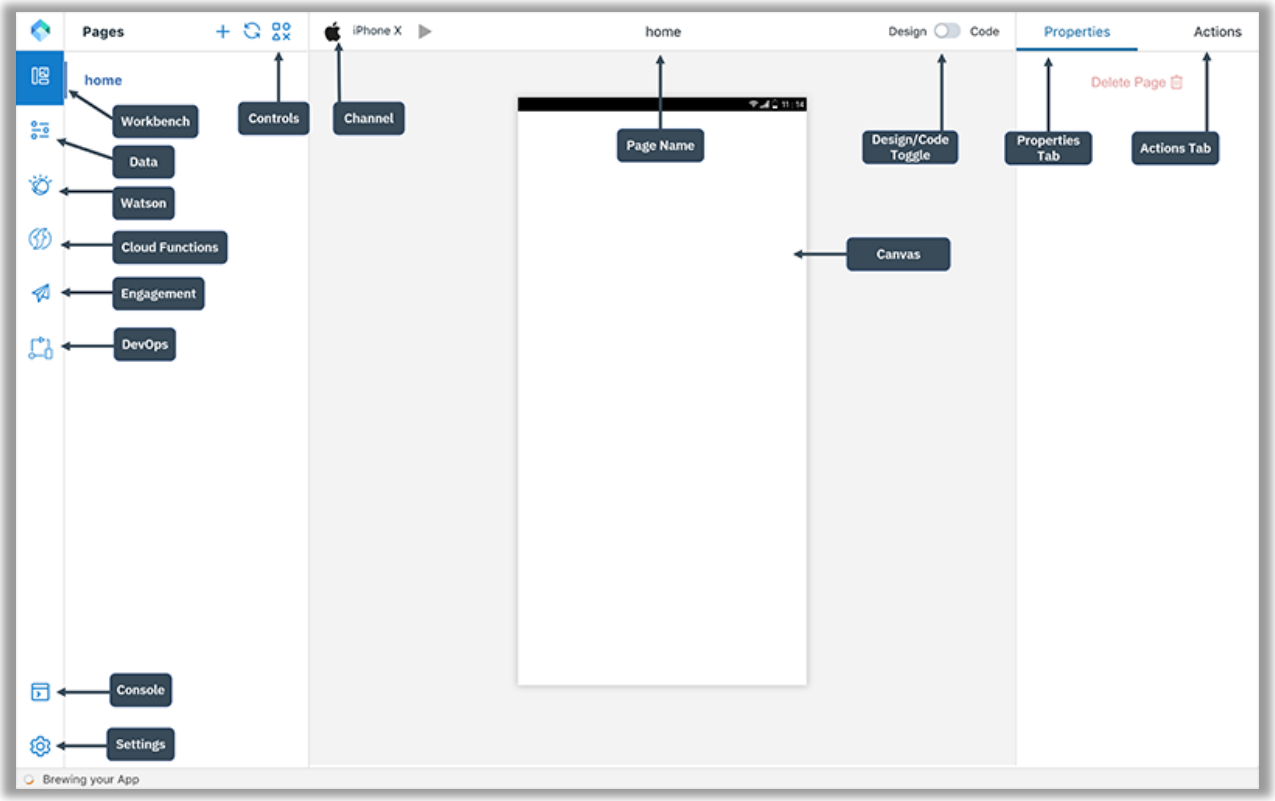
MRO Strategy and Optimization

Now that the tool has been installed and the application has been created. *Sheila* wants to explore how easy it is to use this tool to build a screen from the ground-up, and what are the different capabilities offered within the *Builder* tool, her ultimate goal is to evaluate if it is a good candidate for their project.

Follow *Sheila* as she does the steps below to explore *Builder* capabilities for low-code cloud application development:

Project Explorer

The development environment, called Project Explorer, brings in all the artifacts needed for her to start developing an app.

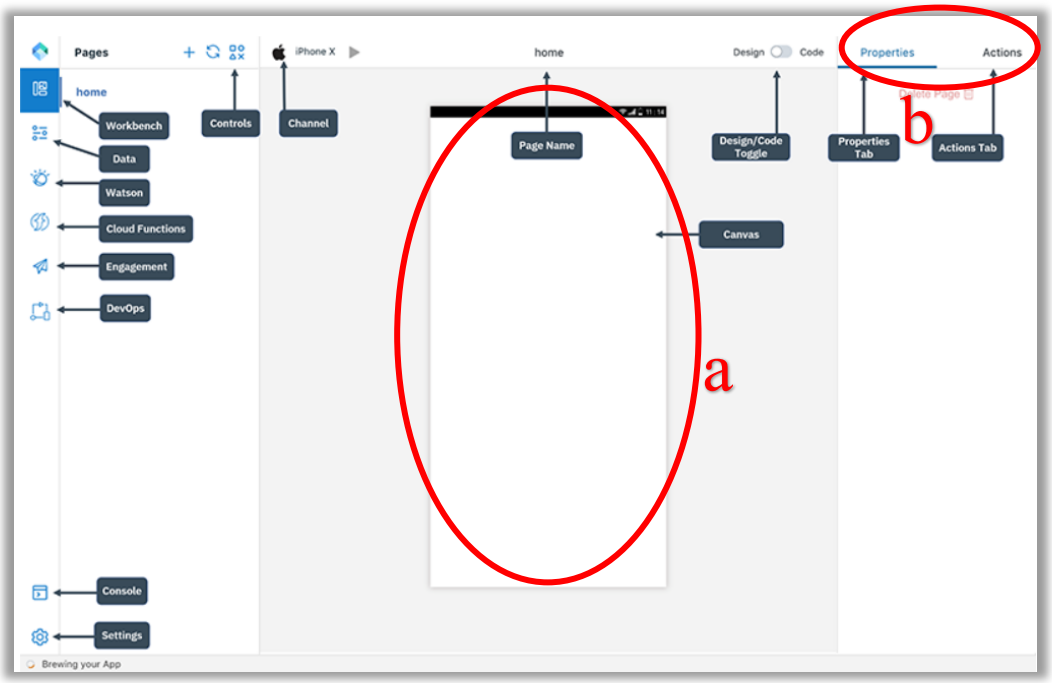


Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

Explore the Project Explorer which consists of the following sections:

- **Activity Bar** – Consists of:
  - **Workbench** - displays or hides page details
  - **Data** - helps you to add a dataset by connecting to an existing data source or create a data source for a microservice using OpenAPI doc.
  - **Watson** - consists of Image Recognition and Chatbot (Watson Assistant) components for configuring an existing instance or create a new instance.
  - **Cloud Functions** - helps you to work with Cloud Functions (Coming soon!)
  - **Engagement** - work with Engagements (Coming soon!)
  - **DevOps** - work with IBM DevOps process (Coming soon!)
  - **Console**: displays the console to see the code for each component.
  - **Settings**: displays the project details.

The center of the Project Explorer is the **Canvas (a)**, which displays the design, the code and the channel for which the app creation is planned.



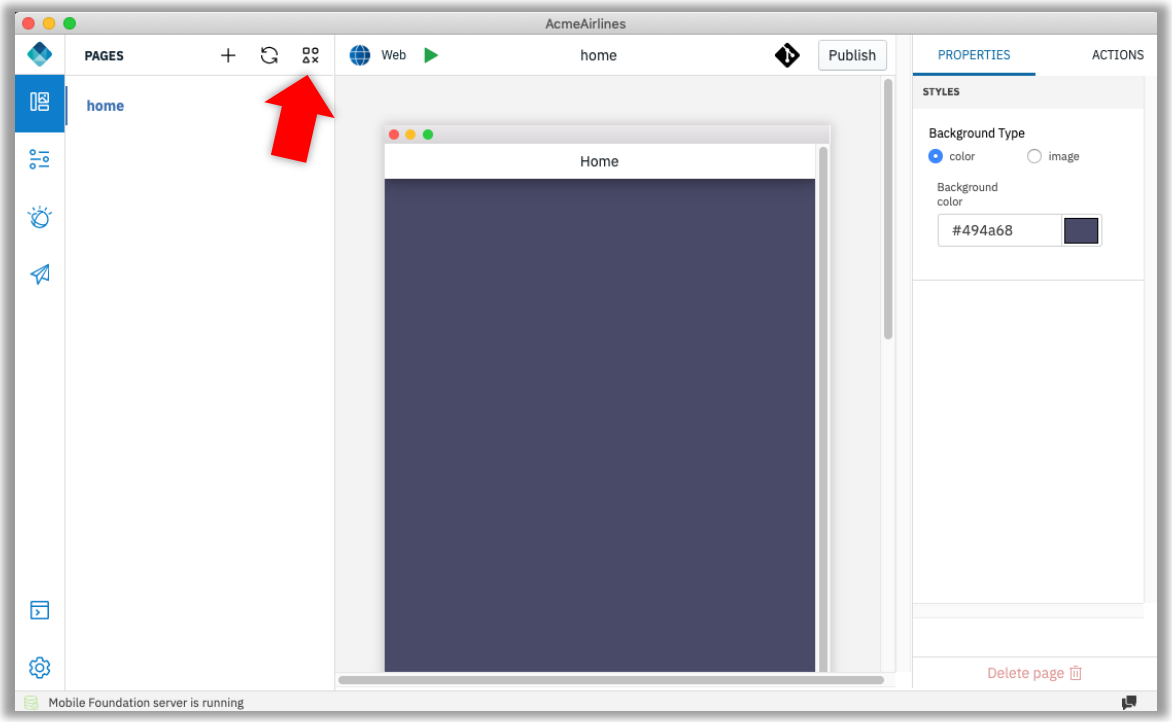
At the right-hand side is the **Properties** and action toolbar (b).

> ***INFO***
>
> When a control is placed in the canvas, you can edit and modify the properties of the control and connect a control with a related action to perform.

Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

Controls adds functionality to a page in an app.

1. Click on the **Show Controls** icon to bring up the **Controls Palette**.



> ***INFO***
>
> Each control, **Button**, **Heading**, **Image**, **Label**, has a set of properties and actions.

Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

Milestone 4. ACME Business Case – Preparing the App

Case Study

Sheila

Cloud Apps Builder

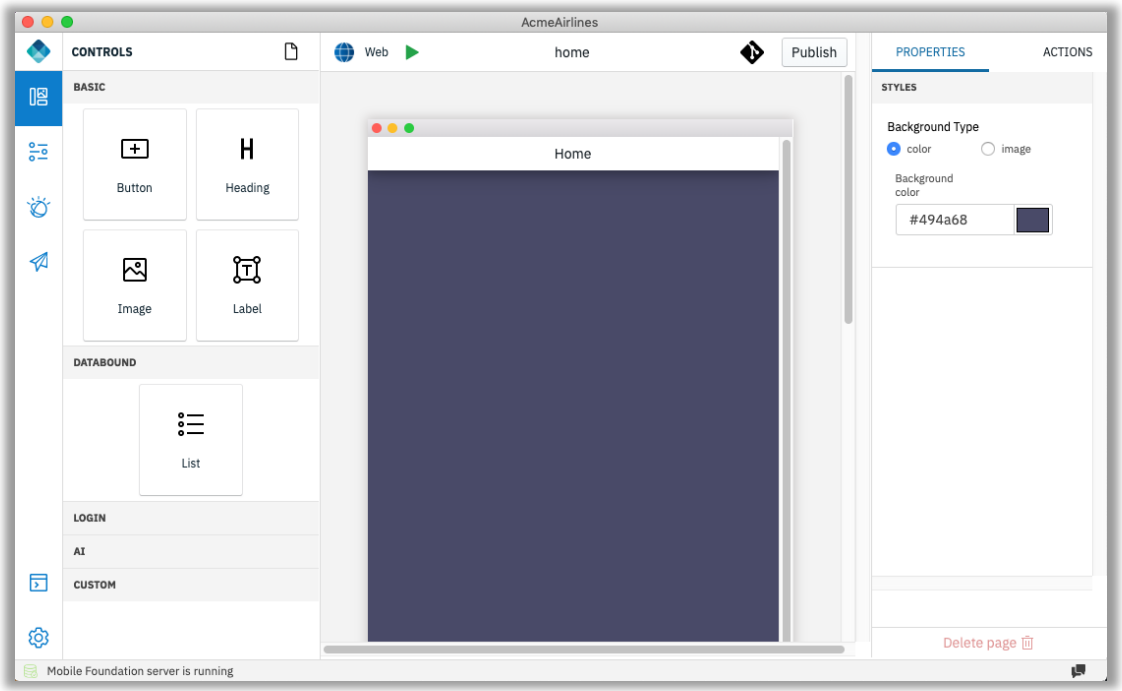
MRO Strategy and Optimization

By now Sheila has followed all the steps above, she installed the Builder tool, created her first application environment, and explored the tool's capabilities. Now is time to work within the project Explorer window and start designing her first application prototype.

Follow *Sheila* as she does the steps below to create her first cloud application:

First Cloud Application

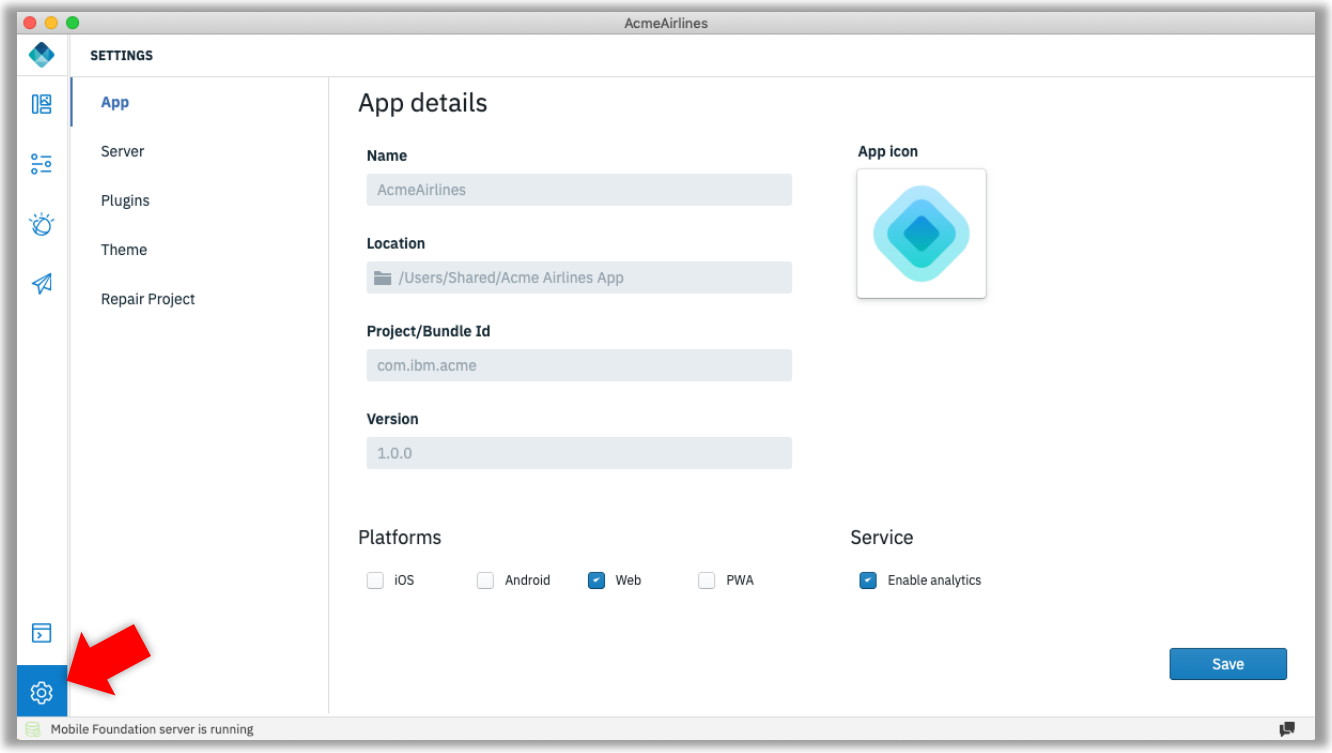
The first page, home, will be our future login page. For now, we are going to use a button in place of the login form, but in *Lab 6: Finalize your Application Security* we will come back to this page.



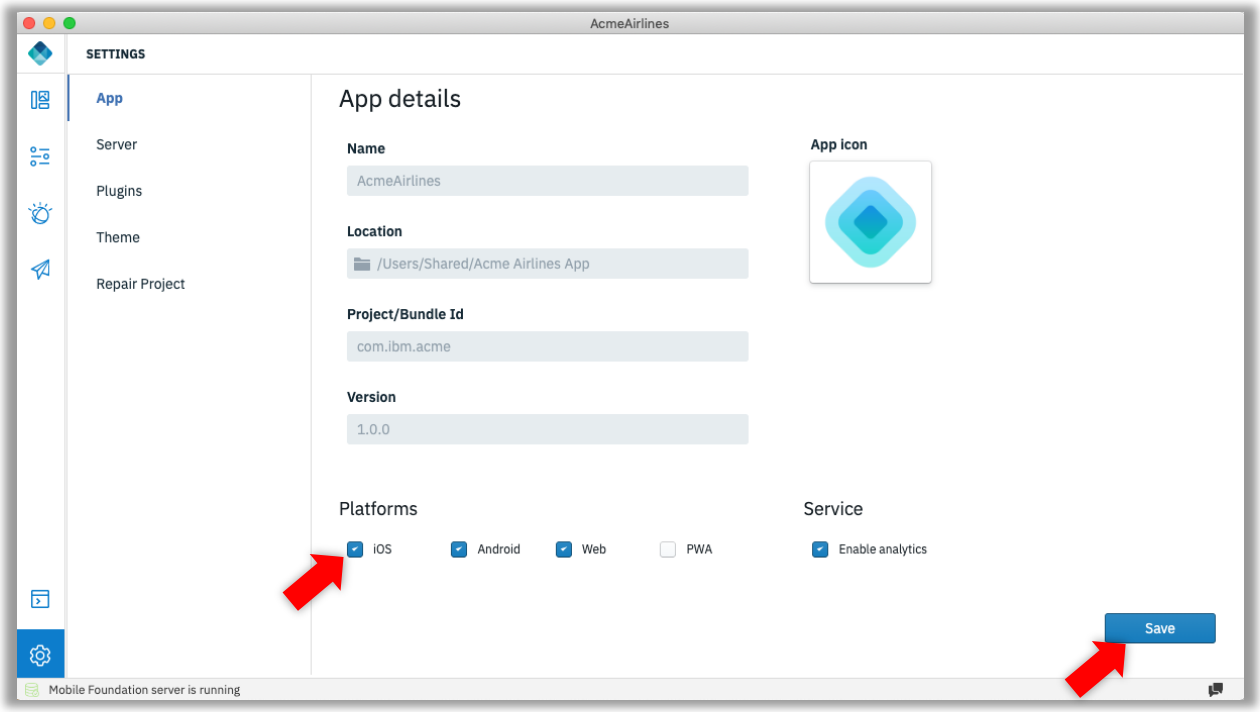
Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

Depending on Monitor size, it may be easier to work on the application in an iPhone or Android view.

2. Navigate to **Settings** at the bottom left of the Digital App Builder.

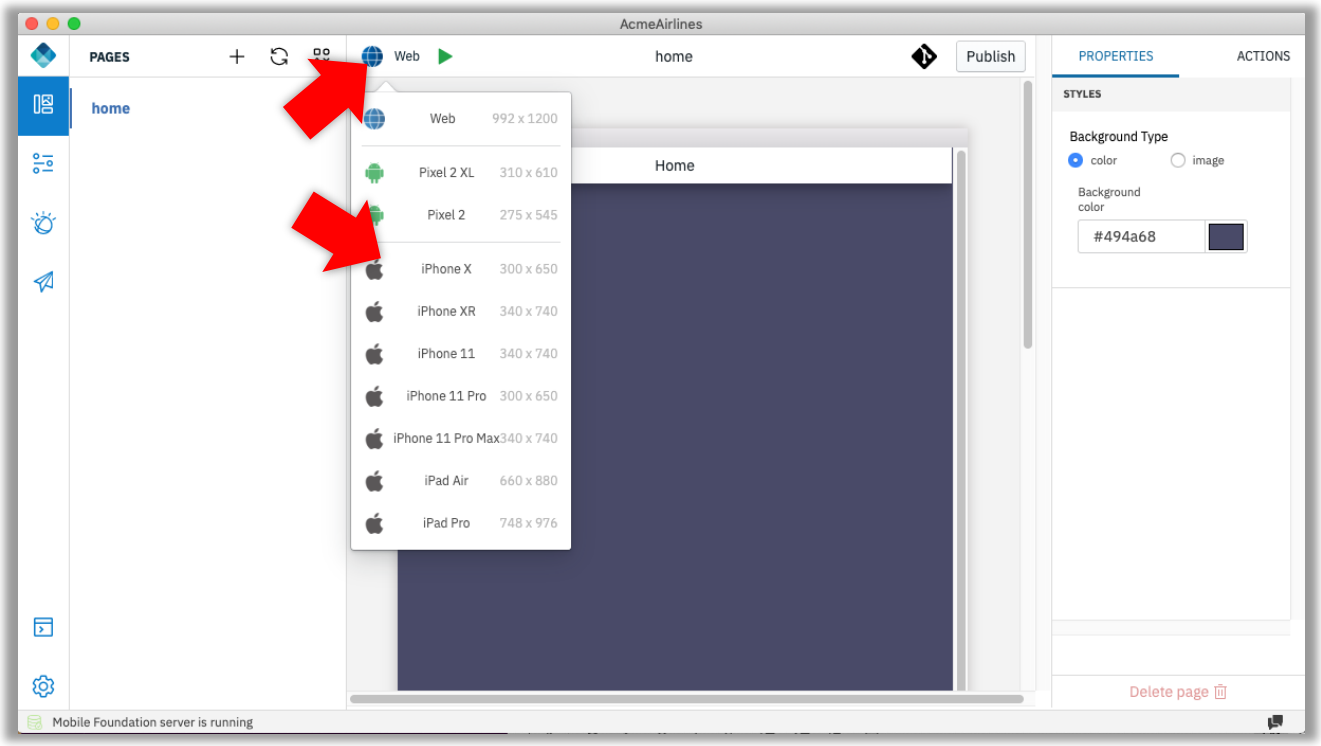


3. Under **Platforms**, check the boxes for **iOS** and **Android**; then click **Save**.

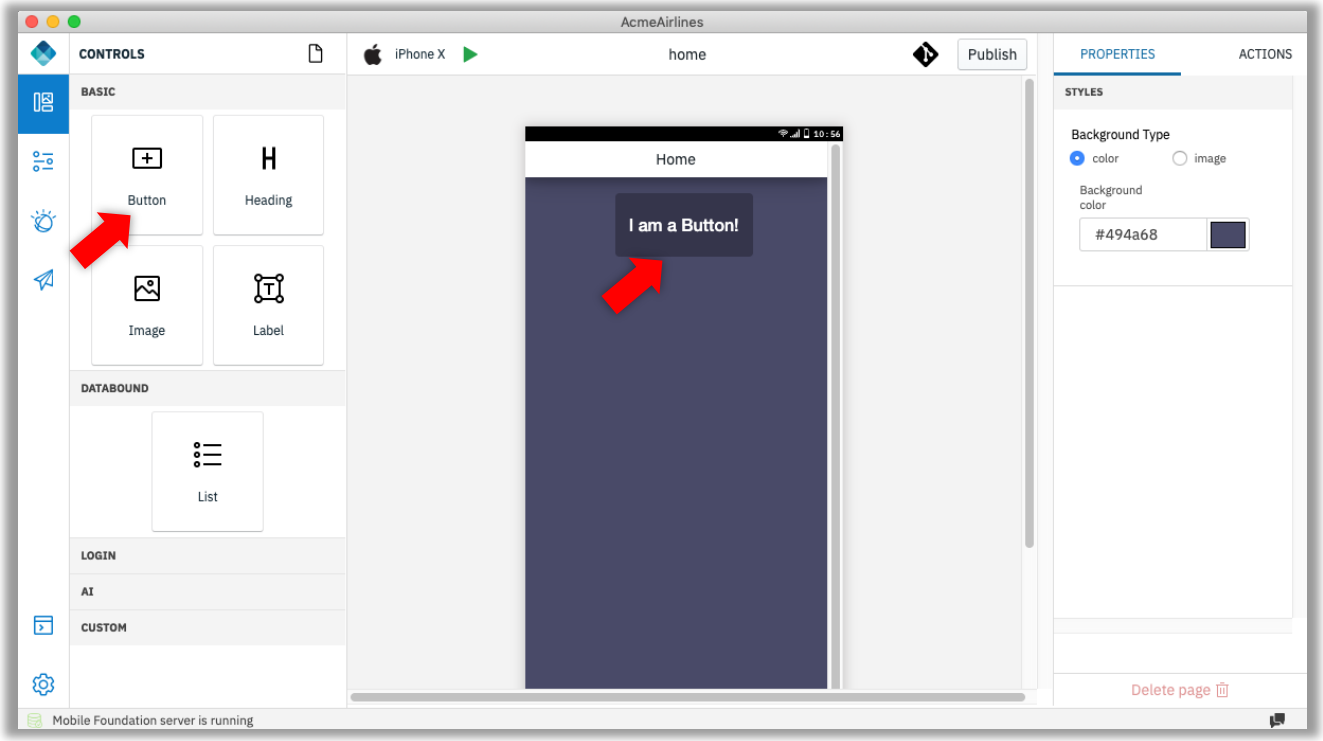


Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

4. Return to the **Workbench**; at the top of the Digital App Builder click on **Web** to open a drop down of devices to preview from. Select **iPhone X**.

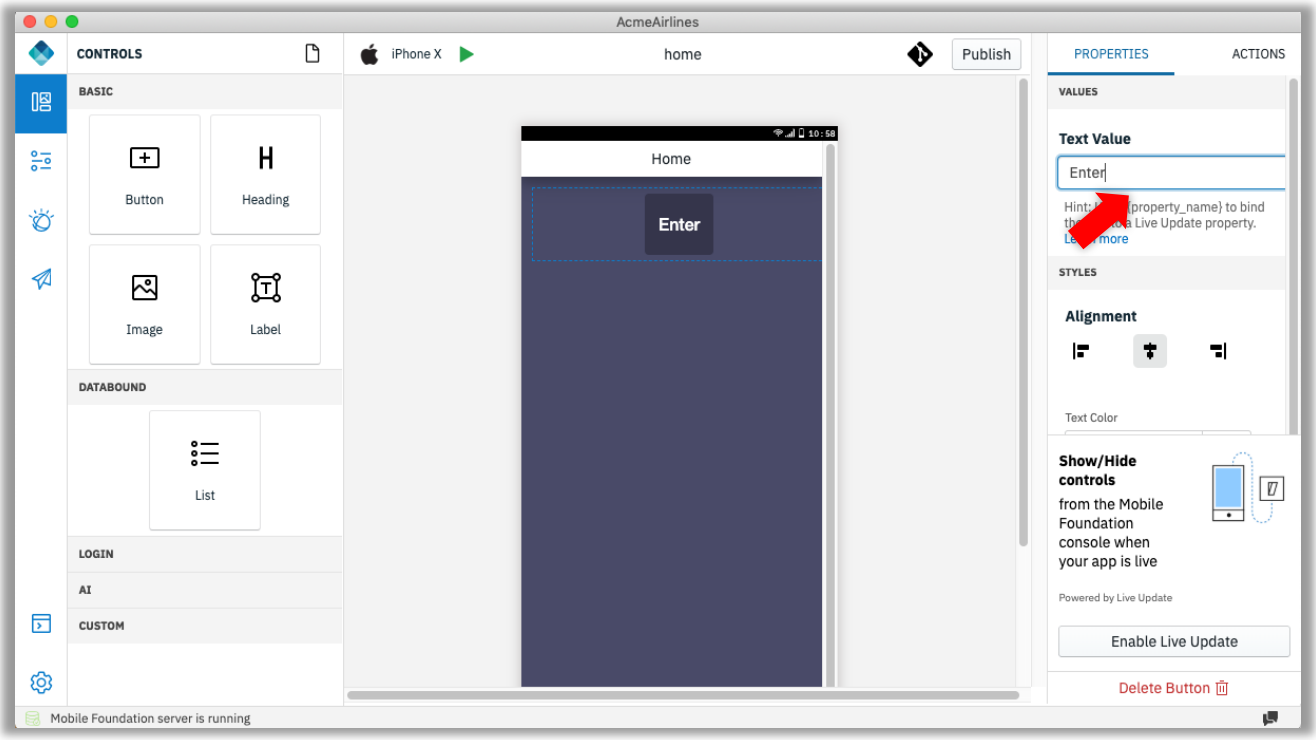


5. Drag and drop **Button** from the Controls Palette into the **Canvas**.

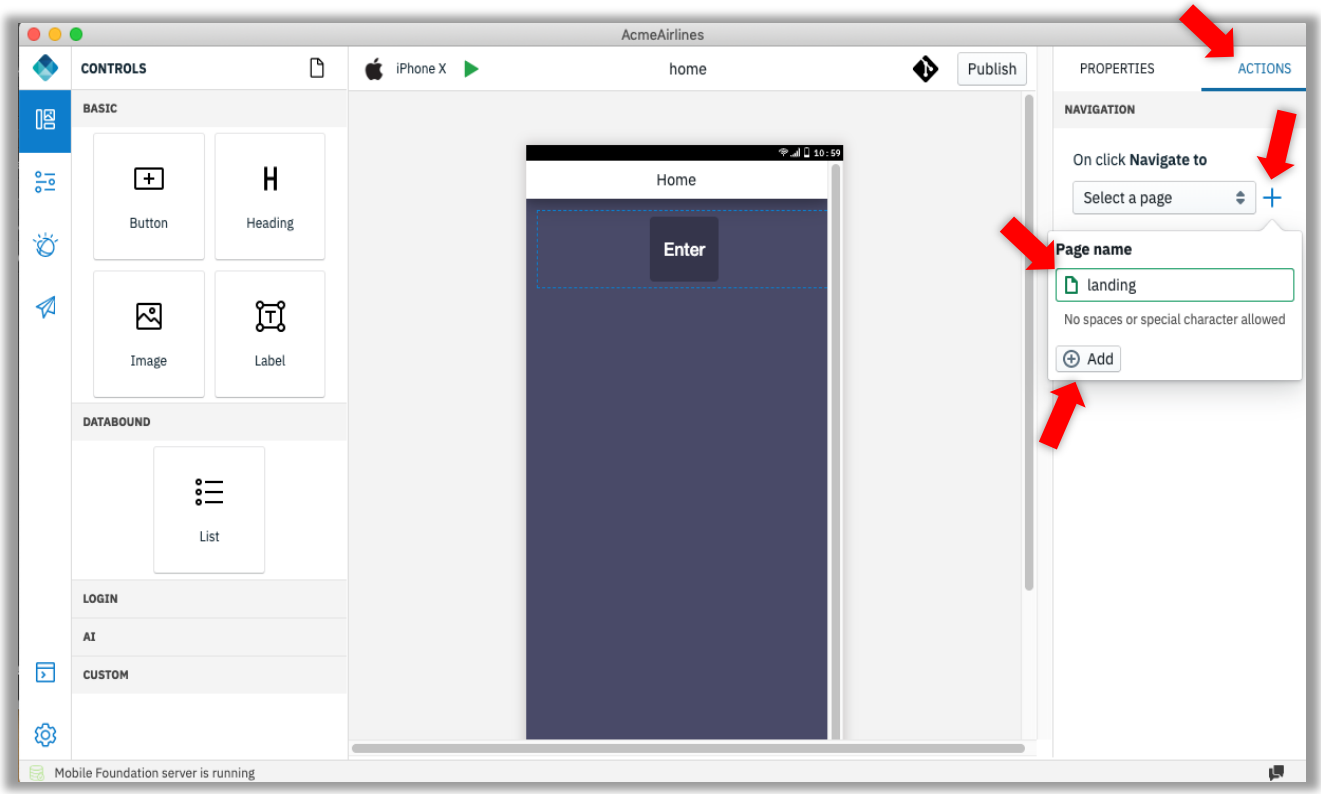


Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

6. Select the Button and change the **Text Value** to “Enter”.

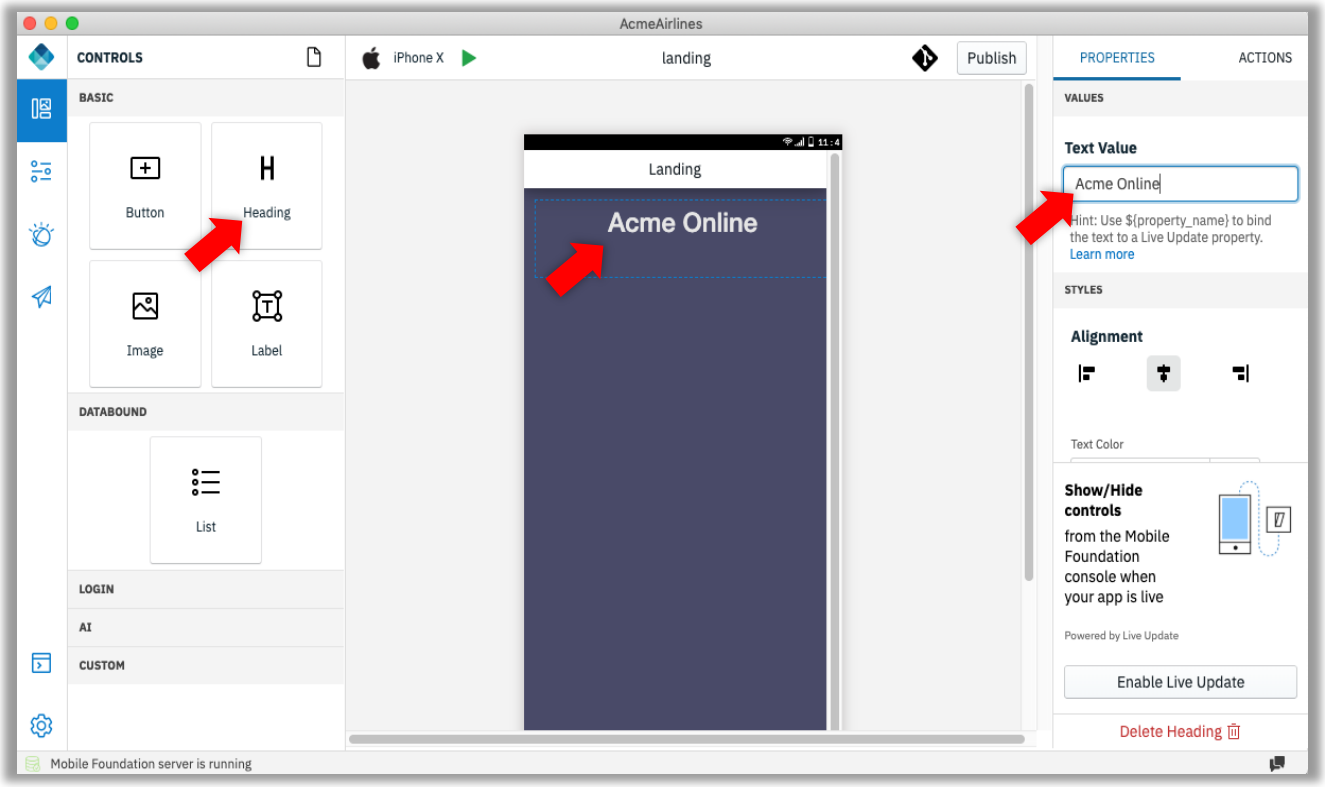


7. Next select the **Actions** tab and click on the **+** next to Select a page. Enter **landing** as the new page name and then select **Add**.

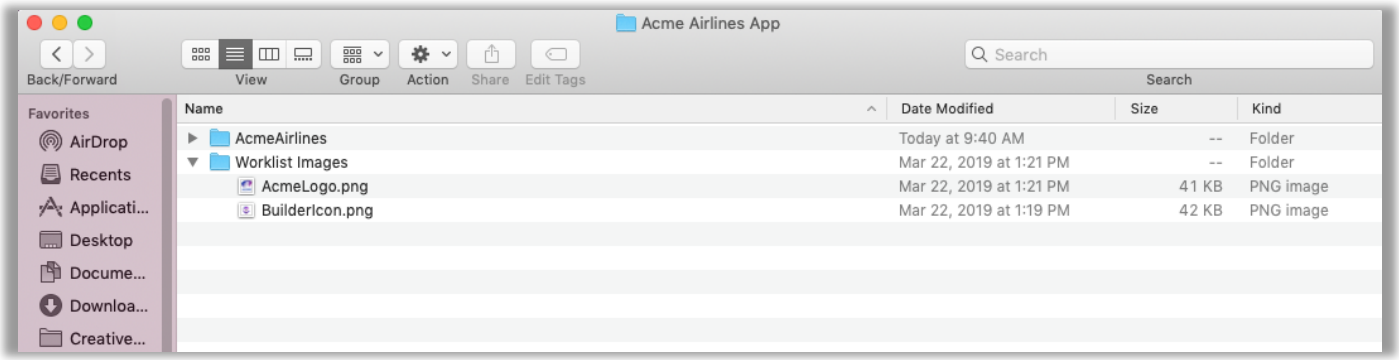


Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

8. On the landing page, drag and drop a **Heading** onto the Canvas. Type '**Acme Online**' into the **Text Value** box.

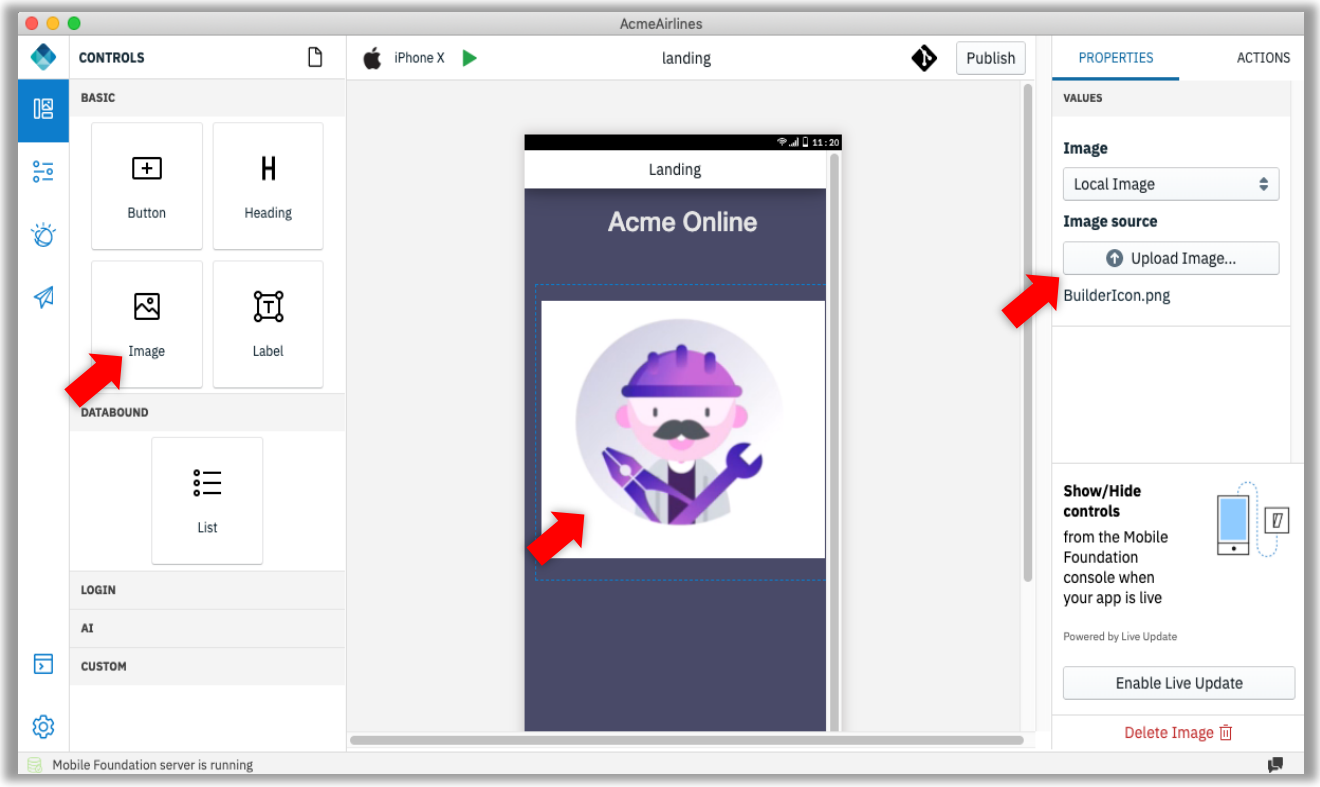


In the next steps, we will import images into the Digital App Builder. These images, **AcmeLogo.png** and **BuilderIcon.png** can be downloaded from the Student Portal. It is recommended you save them into the same folder you created for Acme Airlines App.



Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

9. Import the **BuilderIcon.png** into the landing page canvas by dragging the **Image** control into the canvas, then clicking **Upload Image** from Image Source.

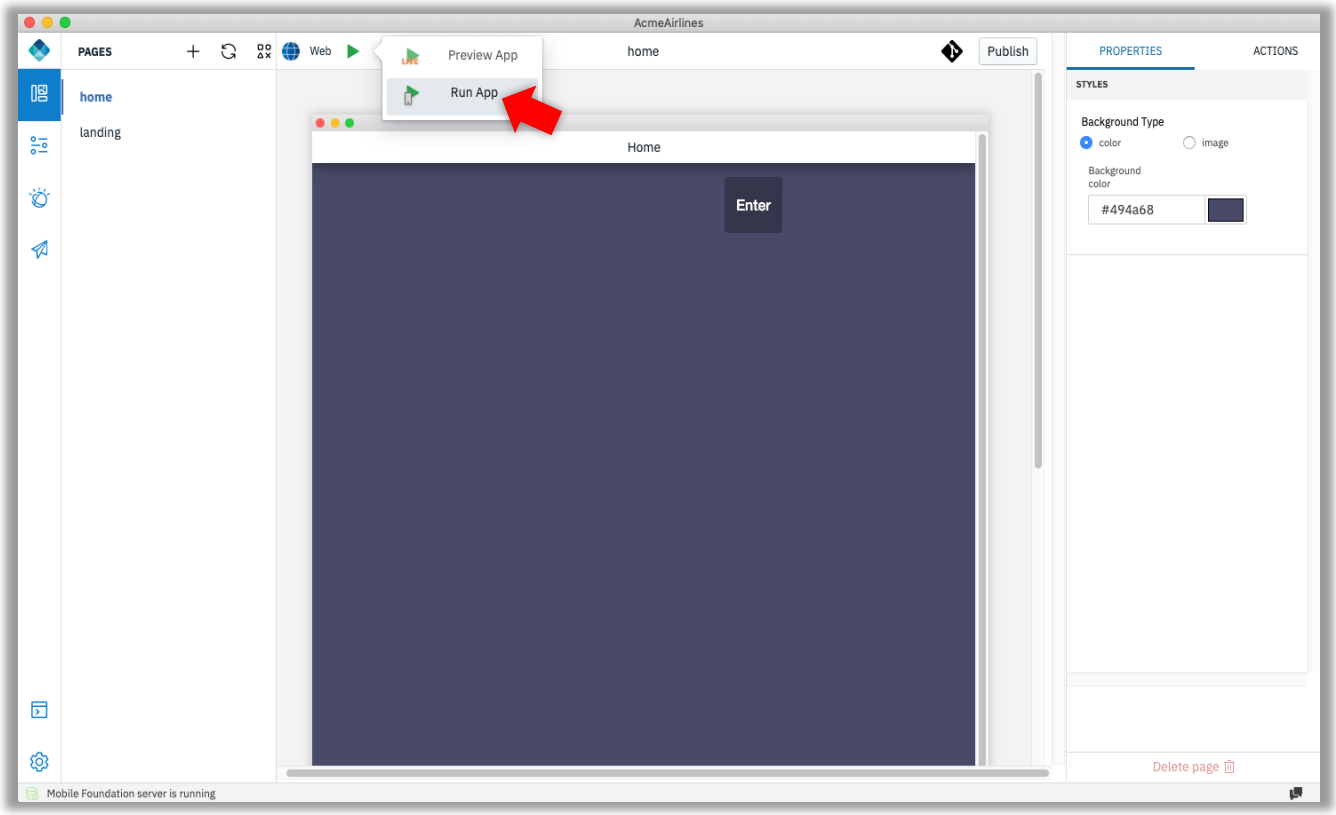


Now Sheila has set up a login in page as well as the groundwork for the landing page, she does not have the chat or visual recognition services available, but she can still preview the application in her computer.

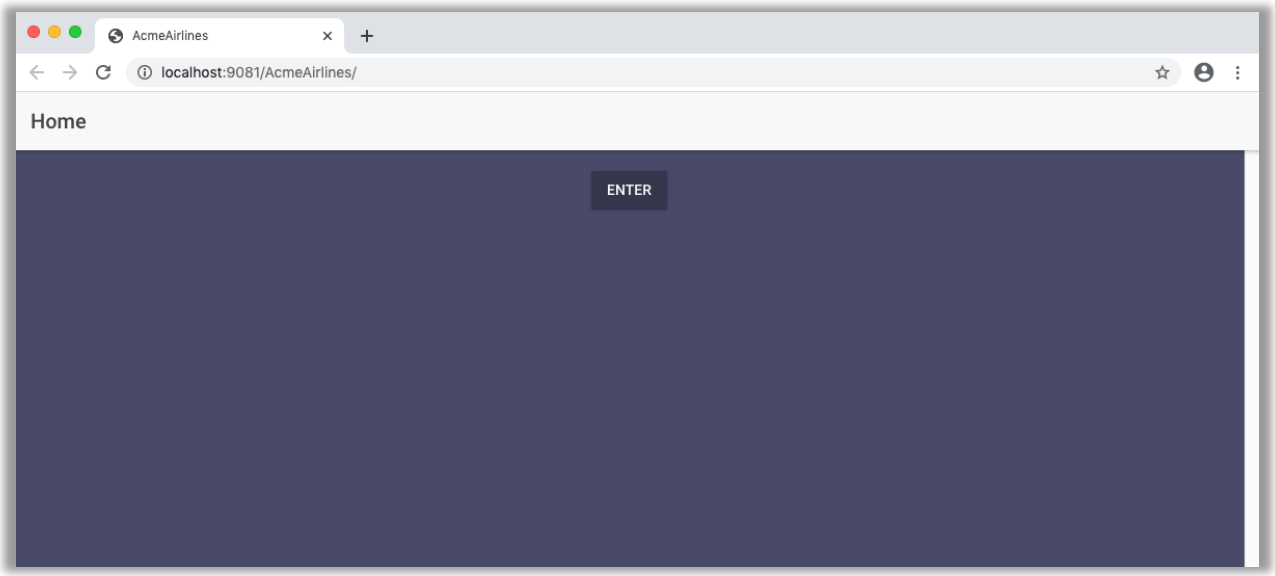
Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

Test the application running in a Browser

1. To run the application, click on the green arrow on the top of the Digital App Builder and select Run.

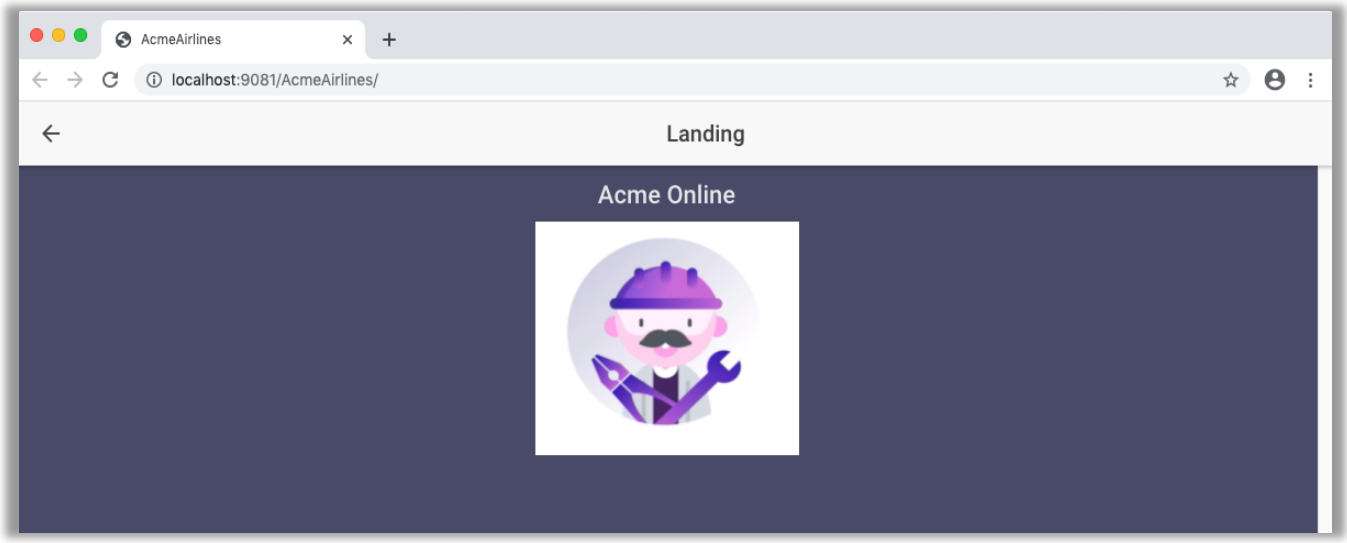


2. The app will open in a separate tab. It's nothing too exciting just yet, but throughout this course we will continue to build on our budding application.



Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

3. Test that the button works correctly and redirects you to the correct landing page.



Congratulations, you have now completed Lab 2 – Acme Airline Cloud Adoption.

Course materials may not be reproduced in whole or in part without the prior written permission of IBM.

© Copyright IBM Corporation 2019.

The information contained in these materials is provided for informational purposes only, and is provided AS IS without warranty of any kind, express or implied. IBM shall not be responsible for any damages arising out of the use of, or otherwise related to, these materials. Nothing contained in these materials is intended to, nor shall have the effect of, creating any warranties or representations from IBM or its suppliers or licensors, or altering the terms and conditions of the applicable license agreement governing the use of IBM software. References in these materials to IBM products, programs, or services do not imply that they will be available in all countries in which IBM operates. This information is based on current IBM product plans and strategy, which are subject to change by IBM without notice. Product release dates and/or capabilities referenced in these materials may change at any time at IBM's sole discretion based on market opportunities or other factors, and are not intended to be a commitment to future product or feature availability in any way.

IBM, the IBM logo and ibm.com are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at www.ibm.com/legal/copytrade.shtml.

Please Recycle