



Curtin University

Managing Code

ISYS2001, School of Marketing and Management

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I acknowledge the traditional custodians of
the land on which I work and live, and
recognise their continuing connection to land,
water and community. I pay respect to elders
past, present and emerging.



Today

- Enterprise Software
- Features of Software Ecosystem
- Development → Production Workflow
- Deployment
- Future



Enterprise Software Today

- Cloud Based
 - Complex
 - Independent of Operating System
- Browser Based



Features of Software Ecosystem

- Reliability
- Accessibility
- Reusability
- Interpretability
- Flexibility
- Agility



Ecosystem Considerations

- How do you get the data?
- Where does the code run?
- How is your code organised?
- Where do your outputs go?



Application

- Development
- Production
- Interface - Widgets + Code
- Deployment

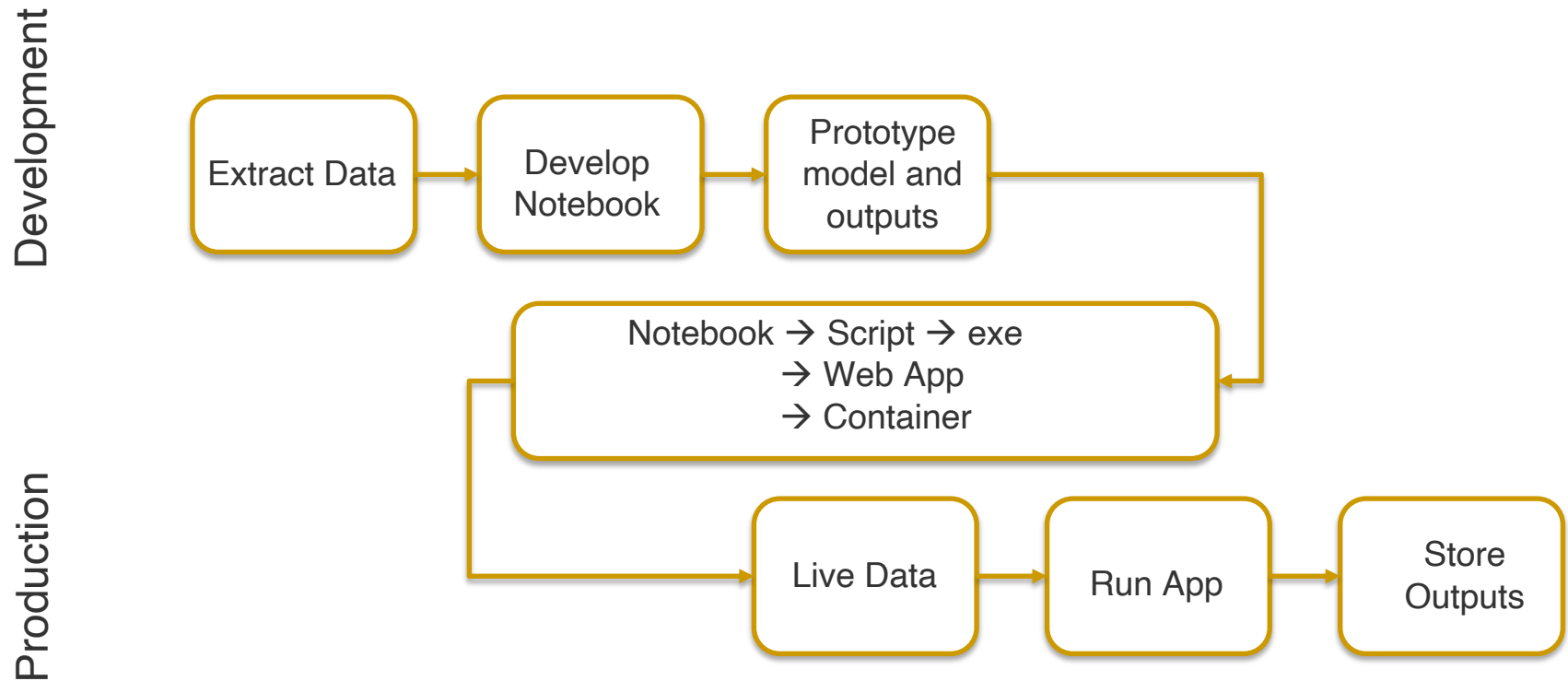


Virtual environments

- Create virtual environment
- Activate virtual environment
- Install required packages
- Deactivate environment



Typical Workflow



Development

- Local Environment
 - Jupyter Lab, VSCode,
- Cloud Environment
 - AWS, Google Compute, Azure
- Notebook Specific
 - Paperspace, Colab



Deployment

- Notebooks as Packages

NBDev

- Notebooks as (Web) Apps

Ipywidgets, Voila, Appmode, Anvill

- Deploy/Share

nbviewer, GitHub, Binder, Docker

nbconvert → Script → Package/Exe

Binder

Build and launch a repository


GitHub repository name or URL


1 GitHub ▾ 2

Git ref (branch, tag, or commit) Path to a notebook file (optional)

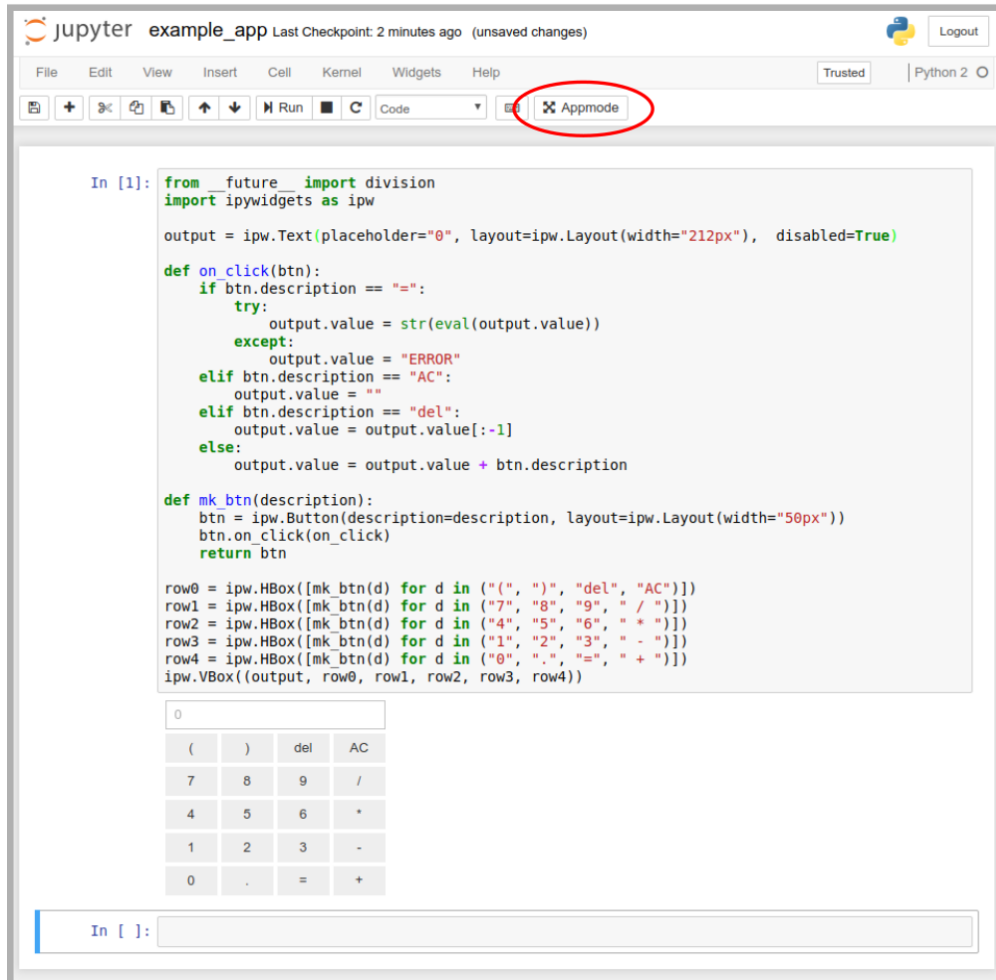
File ▾ 4 launch

Copy the URL below and share your Binder with others:

3 

Expand to see the text below, paste it into your README to show a binder badge:  ▶

Appmode



The JupyterLab interface shows a code editor with Python code for a calculator application. The code uses IPyWidgets to create a text input, buttons for digits and operators, and a grid layout. The 'Appmode' button in the top toolbar is circled in red. Below the code editor, a preview of the calculator app is visible, showing a text input with '0' and a grid of buttons.

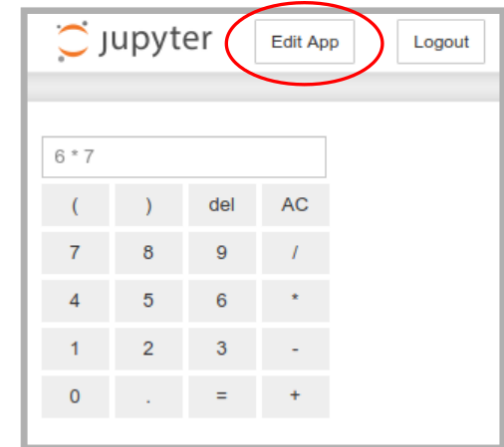
```
In [1]: from __future__ import division
import ipywidgets as ipw

output = ipw.Text(placeholder="0", layout=ipw.Layout(width="212px"), disabled=True)

def on_click(btn):
    if btn.description == "=":
        try:
            output.value = str(eval(output.value))
        except:
            output.value = "ERROR"
    elif btn.description == "AC":
        output.value = ""
    elif btn.description == "del":
        output.value = output.value[:-1]
    else:
        output.value = output.value + btn.description

def mk_btn(description):
    btn = ipw.Button(description=description, layout=ipw.Layout(width="50px"))
    btn.on_click(on_click)
    return btn

row0 = ipw.HBox([mk_btn(d) for d in ("(", ")", "del", "AC")])
row1 = ipw.HBox([mk_btn(d) for d in ("7", "8", "9", "/" )])
row2 = ipw.HBox([mk_btn(d) for d in ("4", "5", "6", "* ")])
row3 = ipw.HBox([mk_btn(d) for d in ("1", "2", "3", "- ")])
row4 = ipw.HBox([mk_btn(d) for d in ("0", ".", "=", "+" )])
ipw.VBox((output, row0, row1, row2, row3, row4))
```



The JupyterLab interface shows the calculator application running in App mode. The 'Edit App' button in the top toolbar is circled in red. The application displays a text input with the expression '6 * 7' and a grid of buttons for digits and operators.

Future

- Notebooks as Applications
- Rise of Containers
- New Platforms
- New Capabilities



Can you?

- State the direction of enterprise software today
- List the features of software ecosystem
- Describe a development to production workflow
- Suggest how to deploy and share code
- Outline a possible future for notebooks

