LẬP TRÌNH PYTHON
PyInstaller

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Nội dung

PyInstaller

Description

PyInstaller **bundles** a Python application and all its dependencies **into a single package**.

- PyInstaller correctly bundles many major Python packages such as numpy, matplotlib, **PyQt**, wxPython, and others.
- PyInstaller is tested against Windows, MacOS X, and Linux. However, it is not a cross-compiler; *to make a Windows app you run PyInstaller on Windows*, and to make a Linux app you run it on Linux...

Installation

```
pip install -U pyinstaller
```

Lưu ý

Sinh viên cần phải cài đặt PyInstaller trong môi trường ảo **virtualenv** để tránh trường hợp compile code bị lỗi và đóng gói thừa thư viện dẫn đến tăng dung lượng của ứng dụng. Thực hiện các bước sau:

1. tạo môi trường ảo: virtualenv my_venv
2. kích hoạt môi trường ảo trên hệ điều hành:
   - Unix: source my_venv/bin/activate
   - Windows: my_venv\Scripts\activate
3. Cài đặt thư viện cần thiết trong môi trường ảo my_venv
4. Cài đặt PyInstaller trong môi trường ảo

A short command to bundle your Python program

Open a command promptshell window, and navigate to the directory where *your .py* file is located, then build your app with the following command:

```
pyinstaller your_program.py
```

Your bundled application should now be **available in the dist folder**.

Single-file executable

With a few added options, for example a windowed application as a single-file executable:

```
pyinstaller –onefile –windowed myscript.py
```

Đóng gói ứng dụng có giao diện PyQt6 trong bài trước I

Đóng gói python script **grid.py** sau

```
1  import sys, json
2  from PyQt6.QtWidgets import (QApplication, QWidget, QLabel,
3      QLineEdit, QCheckBox, QTextEdit, QGridLayout)
4  from PyQt6.QtCore import Qt, QDate
5  from PyQt6.QtGui import QFont
6
7  class MainWindow(QWidget):
8
9      def __init__(self):
10         super().__init__()
11         self.initializeUI()
12
13     def initializeUI(self):
14         """Set up the application's GUI."""
15         self.setMinimumSize(500, 300)
16         self.setWindowTitle("QGridLayout Example")
17
18         self.setUpMainWindow()
19         self.loadWidgetValuesFromFile()
20         self.show()
21
22     def setUpMainWindow(self):
```

Đóng gói ứng dụng có giao diện PyQt6 trong bài trước II

```
23          """Create and arrange widgets in the main window."""
24          name_label = QLabel("Simple Daily Planner")
25          name_label.setFont(QFont("Arial", 20))
26          name_label.setAlignment(Qt.AlignmentFlag.AlignLeft)
27
28          # Create widgets for the left side of the window
29          today_label = QLabel("Today's Focus")
30          today_label.setFont(QFont("Arial", 14))
31          self.today_tedit = QTextEdit()
32
33          notes_label = QLabel("Notes")
34          notes_label.setFont(QFont("Arial", 14))
35          self.notes_tedit = QTextEdit()
36
37          # Organize the left side widgets into a column 0
38          # of the QGridLayout
39          self.main_grid = QGridLayout()
40          self.main_grid.addWidget(name_label, 0, 0)
41          self.main_grid.addWidget(today_label, 1, 0)
42          self.main_grid.addWidget(self.today_tedit, 2, 0, 3, 1)
43          self.main_grid.addWidget(notes_label, 5, 0)
44          self.main_grid.addWidget(self.notes_tedit, 6, 0, 3, 1)
45
46          # Create widgets for the right side of the window
```

Đóng gói ứng dụng có giao diện PyQt6 trong bài trước III

```
47          today = QDate.currentDate().toString(Qt.DateFormat.ISODate)
48          date_label = QLabel(today)
49          date_label.setFont(QFont("Arial", 18))
50          date_label.setAlignment(Qt.AlignmentFlag.AlignRight)
51
52          todo_label = QLabel("To Do")
53          todo_label.setFont(QFont("Arial", 14))
54
55          # Organize the right side widgets into columns 1 and 2
56          # of the QGridLayout
57          self.main_grid.addWidget(date_label, 0, 2)
58          self.main_grid.addWidget(todo_label, 1, 1, 1, 2)
59
60          # Create 7 rows, from indexes 2-8
61          for row in range(2, 9):
62              item_cb = QCheckBox()
63              item_edit = QLineEdit()
64              self.main_grid.addWidget(item_cb, row, 1)
65              self.main_grid.addWidget(item_edit, row, 2)
66
67          # Set the layout for the main window
68          self.setLayout(self.main_grid)
69
70      def saveWidgetValues(self):
```

Đóng gói ứng dụng có giao diện PyQt6 trong bài trước IV

```
71          """Collect and save the values for the different widgets."""
72          details = {"focus": self.today_tedit.toPlainText(),
73                     "notes": self.notes_tedit.toPlainText()}
74          remaining_todo = []
75
76          # Check the values of the QCheckBox widgets
77          for row in range(2, 9):
78              # Retrieve the QLayoutItem object
79              item = self.main_grid.itemAtPosition(row, 1)
80              # Retrieve the widget (QCheckBox)
81              widget = item.widget()
82              if widget.isChecked() == False:
83                  # Retrieve the QLayoutItem object
84                  item = self.main_grid.itemAtPosition(row, 2)
85                  # Retrieve the widget (QLineEdit)
86                  widget = item.widget()
87                  text = widget.text()
88                  if text != "":
89                      remaining_todo.append(text)
90              # Save text from QLineEdit widgets
91              details["todo"] = remaining_todo
92
93          with open("details.txt", "w") as f:
94              f.write(json.dumps(details))
```

Đóng gói ứng dụng có giao diện PyQt6 trong bài trước V

```
95
96      def loadWidgetValuesFromFile(self):
97          """Retrieve the user's previous values from the last session."""
98          # Check if file exists first
99          try:
100             with open("details.txt", "r") as f:
101                 details = json.load(f)
102                 # Retrieve and set values for the widgets
103                 self.today_tedit.setText(details["focus"])
104                 self.notes_tedit.setText(details["notes"])
105
106                 # Set the text for QLineEdit widgets
107                 for row in range(len(details["todo"])):
108                     # Retrieve the QLayoutItem object
109                     item = self.main_grid.itemAtPosition(row + 2, 2)
110                     # Retrieve the widget (QLineEdit)
111                     widget = item.widget()
112                     widget.setText(details["todo"][row])
113         except FileNotFoundError as error:
114             # Create the file since it doesn't exist
115             f = open("details.txt", "w")
116
117     def closeEvent(self, event):
118         """Save widget values when closing the window."""
```

Đóng gói ứng dụng có giao diện PyQt6 trong bài trước VI

```
119             self.saveWidgetValues()
120
121 if __name__ == '__main__':
122     app = QApplication(sys.argv)
123     window = MainWindow()
124     sys.exit(app.exec())
```

Lưu ý: cần phải cài đặt thư viện PyQt6 trước rồi mới sử dụng lệnh:

pyinstaller –onefile –windowed grid.py

Using PyInstaller

The syntax of the pyinstaller command is:

pyinstaller [options] script [script ...] | specfile

Optional Arguments:

- –clean: Clean PyInstaller cache and remove temporary files before building.
- -D, –onedir: Create a one-folder bundle containing an executable (default)
- -F, –onefile: Create a one-file bundled executable.
- -c, –console, –**nowindowed**: Open a console window for standard i/o (default). On Windows this option has no effect if the first script is a '.pyw' file.
- -w, –windowed, –noconsole: Windows and Mac OS X: do not

Using PyInstaller

- -w, –windowed, –**noconsole**: Windows and Mac OS X: do not provide a console window for standard i/o. On Mac OS this also triggers building a Mac OS .app bundle. On Windows this option is automatically set if the first script is a '.pyw' file. This option is ignored on *NIX systems. For example:

  pyinstaller -D -F -w grid.py

- For more details, see the link below:
  `https://pyinstaller.org/en/stable/usage.html`

Tài liệu tham khảo

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Mark Lutz

Learning Python (5th Edition). *O'Reilly Media, Inc, 2013.*

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Fluent Python (2nd Edition). *O'Reilly Media, Inc, 2021.*

Python Software Foundation

`https://docs.python.org/3/tutorial/`