

Week 16

## 使用介面

### Tkinter 元件(TK interface)

- Python的標準內建GUI元件
- Tkinter的提供各種控制元件，如按鈕，標籤和文字框，等等。
- 這些控制元件通常被稱為控制元件。目前有15種Tkinter的元件。

控制元件	描述
Button	按鈕控制元件；在程式中顯示按鈕。
Canvas	畫布控制元件；顯示圖形元素如線條或文字
Checkbutton	多選框控制元件；用於在程式中提供多項選擇框
Entry	輸入控制元件；用於顯示簡單的文字內容
Frame	框架控制元件；在螢幕上顯示一個矩形區域，多用來作為容器
Label	標籤控制元件；可以顯示文字和點陣圖

Listbox	列表框控制元件；在Listbox視窗小部件是用來顯示一個字串列表給使用者
Menubutton	選單按鈕控制元件，由於顯示選單項。
Menu	選單控制元件；顯示選單欄,下拉選單和彈出選單
Message	訊息控制元件；用來顯示多行文字，與label比較類似
Radiobutton	單選按鈕控制元件；顯示一個單選的按鈕狀態
Scale	範圍控制元件；顯示一個數值刻度，為輸出限定範圍的數字區間
Scrollbar	滾動條控制元件，當內容超過視覺化區域時使用，如列表框。

Text	文字控制元件；用於顯示多行文字
Toplevel	容器控制元件；用來提供一個單獨的對話方塊，和Frame比較類似
Spinbox	輸入控制元件；與Entry類似，但是可以指定輸入範圍值
PanedWindow	PanedWindow是一個窗口布局管理的外掛，可以包含一個或者多個子控制元件。
LabelFrame	labelframe 是一個簡單的容器控制元件。常用與復雜的窗口布局。
tkMessageBox	用於顯示你應用程式的訊息框。

## 內建函式 tkinter

```
>>> import tkinter as tk
>>> dir(tk)
['ACTIVE', 'ALL', 'ANCHOR', 'ARC', 'BASELINE', 'BEVEL', 'BOTH', 'BOTTOM', 'BROWSE',
'BUTT', 'BaseWidget', 'BitmapImage', 'BooleanVar', 'Button', 'CASCADE', 'CENTE
R', 'CHAR', 'CHECKBUTTON', 'CHORD', 'COMMAND', 'CURRENT', 'CallWrapper', 'Canvas',
'Checkbutton', 'DISABLED', 'DOTBOX', 'DoubleVar', 'E', 'END', 'EW', 'EXCEPTION',
'EXTENDED', 'Entry', 'Event', 'EventType', 'FALSE', 'FIRST', 'FLAT', 'Frame',
'GROOVE', 'Grid', 'HIDDEN', 'HORIZONTAL', 'INSERT', 'INSIDE', 'Image', 'IntVar',
LAST', 'LEFT', 'Label', 'LabelFrame', 'Listbox', 'MITER', 'MOVETO', 'MULTIPLE',
Menu', 'Menubutton', 'Message', 'Misc', 'N', 'NE', 'NO', 'NONE', 'NORMAL', 'NS',
'NSEW', 'NUMERIC', 'NW', 'NoDefaultRoot', 'OFF', 'ON', 'OUTSIDE', 'OptionMenu',
PAGES', 'PIESLICE', 'PROJECTING', 'Pack', 'PanedWindow', 'PhotoImage', 'Place',
RADIOBUTTON', 'RAISED', 'READABLE', 'RIDGE', 'RIGHT', 'ROUND', 'Radiobutton', 'S
', 'SCROLL', 'SE', 'SEL', 'SEL_FIRST', 'SEL_LAST', 'SEPARATOR', 'SINGLE', 'SOLID',
'SUNKEN', 'SW', 'Scale', 'Scrollbar', 'Spinbox', 'StringVar', 'TOP', 'TRUE', 'Tcl
', 'TclError', 'TclVersion', 'Text', 'Tk', 'TkVersion', 'Toplevel', 'UNDERLINE',
UNITS', 'VERTICAL', 'Variable', 'W', 'WORD', 'WRITABLE', 'Widget', 'Wm', 'X', 'X
View', 'Y', 'YES', 'YView', '_builtins_', '_cached_', '_doc_', '_file_',
'_loader_', '_name_', '_package_', '_path_', '_spec_', '_cnfmerge_', '_d
efault_root', '_exit_', '_flatten_', '_join_', '_magic_re_', '_setit_', '_space_re_',
'_splitdict_', '_stringify_', '_support_default_root_', '_test_', '_tkerror_', '_tkinte
r_', '_varnum_', 'commanddialog', 'constants', 'dialog', 'enum', 'filedialog', 'getb
oolean', 'getdouble', 'getint', 'image_names', 'image_types', 'mainloop', 'messag
ebox', 're', 'simplicedialog', 'sys', 'wantobjects']
```

```
>>> window=tk.Tk()
>>> dir(window)
['_Misc_wininfo_getint', '_Misc_wininfo_parseitem', '_class_', '_delattr_', '_dict_', '_dir_', '_doc_', '_eq_', '_format_', '_ge_', '_getattr_', '_getattribute_', '_getitem_', '_gt_', '_hash_', '_init_', '_init_subclass_', '_le_', '_lt_', '_module_', '_ne_', '_new_', '_reduce_', '_reduce_ex_', '_repr_', '_setattr_', '_setitem_', '_sizeof_', '_subclasshook_', '_weakref_', '_bind_', '_configure_', '_displayof_', '_an_', '_getconfigure_', '_getconfigurel_', '_getdoubles_', '_getints_', '_re_', '_gridconvvalue_', '_last_child_ids_', '_loadtk_', '_nametowidget_', '_options_', '_register_', '_report_exception_', '_root_', '_subst_format_', '_ormat_str_', '_substitute_', '_tclCommands_', '_tkloaded_', '_w_', '_window_', '_after_', '_after_cancel_', '_after_idle_', '_anchor_', '_aspect_', '_attribute_', '_bell_', '_bind_', '_bind_all_', '_bind_class_', '_bindtags_', '_cget_', '_childr_', '_clipboard_append_', '_clipboard_clear_', '_clipboard_get_', '_colormapw_', '_columnconfigure_', '_command_', '_config_', '_configure_', '_deiconify_', '_destroy_', '_event_add_', '_event_delete_', '_event_generate_', '_event_info_', '_focus_displayof_', '_focus_force_', '_focus_get_', '_focus_lastfor_', '_focus_model_', '_forget_', '_frame_', '_geometry_', '_getboolean_', '_getdouble_', '_gvar_', '_grab_current_', '_grab_release_', '_grab_set_', '_grab_set_global_', '_grid_', '_grid_anchor_', '_grid_bbox_', '_grid_columnconfigure_', '_grid_location_', '_grid_propagate_', '_grid_rowconfigure_', '_grid_size_', '_grid_slaves_', '_group_', '_iconb_', '_itmap_', '_iconify_', '_iconmask_', '_iconname_', '_iconphoto_', '_iconposition_', '_iconwind_', '_image_names_', '_image_types_', '_keys_', '_lift_', '_loadtk_', '_lower_', '_mainloop_', '_manage_', '_master_', '_maxsize_', '_minsize_', '_nametowidget_', '_option_add_', '_option_c_', '_clear_', '_option_get_', '_option_readfile_', '_overrideredirect_', '_pack_propagate_', '_pa_', '_ck_slaves_', '_place_slaves_', '_positionfrom_', '_propagate_', '_protocol_', '_quit_', '_rea_']
```

```
>>> TopFrame=tk.Frame(window)
>>> dir(TopFrame)
['_Misc_wininfo_getint', '_Misc_wininfo_parseitem', '_class_', '_delattr_', '_dict_', '_dir_', '_doc_', '_eq_', '_format_', '_ge_', '_getattr_', '_getattribute_', '_getitem_', '_gt_', '_hash_', '_init_', '_init_subclass_', '_le_', '_lt_', '_module_', '_ne_', '_new_', '_reduce_', '_reduce_ex_', '_repr_', '_setattr_', '_setitem_', '_sizeof_', '_str_', '_subclasshook_', '_subclasshook_', '_weakref_', '_bind_', '_configure_', '_displayof_', '_do_', '_getboolean_', '_getconfigure_', '_getconfigurel_', '_getdoubles_', '_getints_', '_grid_configure_', '_gridconvvalue_', '_last_child_ids_', '_name_', '_nameto', '_widget_', '_noarg_', '_options_', '_register_', '_report_exception_', '_root_', '_setup_', '_subst_format_', '_subst_format_str_', '_substitute_', '_tclCommands_', '_w_', '_windowingsystem_', '_after_', '_after_cancel_', '_after_idle_', '_anchor_', '_bbox_', '_bell_', '_bind_', '_bind_all_', '_bind_class_', '_bindtags_', '_cget_', '_children_', '_clipboard_append_', '_clipboard_clear_', '_clipboard_get_', '_columnconfigure_', '_config_', '_configure_', '_de', '_letecommand_', '_destroy_', '_event_add_', '_event_delete_', '_event_generate_', '_event_info_', '_focus_', '_focus_d', '_isplayof_', '_focus_force_', '_focus_get_', '_focus_lastfor_', '_focus_set_', '_forget_', '_getboolean_', '_getdouble_', '_getint_', '_getvar_', '_grab_current_', '_grab_release_', '_grab_set_', '_grab_set_global_', '_grab_status_', '_g', '_rid_', '_grid_anchor_', '_grid_bbox_', '_grid_columnconfigure_', '_grid_configure_', '_grid_forget_', '_grid_info_', '_grid_location_', '_grid_propagate_', '_grid_remove_', '_grid_rowconfigure_', '_grid_size_', '_grid_slaves_', '_ima', '_ge_names_', '_image_types_', '_info_', '_keys_', '_lift_', '_location_', '_lower_', '_mainloop_', '_master_', '_nametowid', '_get_', '_option_add_', '_option_clear_', '_option_get_', '_option_readfile_', '_pack_', '_pack_configure_', '_pack fo', '_rget_', '_pack_info_', '_pack_propagate_', '_pack_slaves_', '_place_', '_place_configure_', '_place_forget_', '_place', '_info_', '_place_slaves_', '_propagate_', '_quit_', '_register_', '_rowconfigure_', '_selection_clear_', '_selection', '_get_', '_selection_handle_', '_selection_own_', '_selection_own_get_', '_send_', '_setvar_', '_size_', '_slaves_', '_tk', '_tk_bisque_', '_tk_focusFollowsMouse_', '_tk_focusNext_', '_tk_focusPrev_', '_tk_setPalette_', '_tk_strictMoti', '_f_', '_tkraise_', '_unbind_', '_unbind_all_', '_unbind_class_', '_update_', '_update_idletasks_', '_wait_variable_', '_wait_visibility_', '_wait_window_', '_waitvar_', '_widgetName_', '_wininfo_atom_', '_wininfo_atomname_', '_wininfo_cells_', '_wininfo_children_', '_wininfo_class_', '_wininfo_colormapfull_', '_wininfo_containing_', '_wininfo_depth_', '_wininfo_exis', '_ts_', '_wininfo_fpixels_', '_wininfo_geometry_', '_wininfo_height_', '_wininfo_id_', '_wininfo_interps_', '_wininfo_ismapped_', '_wininfo_manager_', '_wininfo_name_', '_wininfo_parent_', '_wininfo_pathname_', '_wininfo_pixels_', '_wininfo_pointerx_', '_win', '_fo_pointerxy_', '_wininfo_pointery_', '_wininfo_reqheight_', '_wininfo_reqwidth_', '_wininfo_rgb_', '_wininfo_rootx_', '_winf', '_o_rooty_', '_wininfo_screen_', '_wininfo_screencells_', '_wininfo_screendepth_', '_wininfo_screenheight_', '_wininfo_screen', '_mmheight_', '_wininfo_screenmmwidth_', '_wininfo_screenvisual_', '_wininfo_screenwidth_', '_wininfo_server_', '_wininfo_top_']
```