Game dev: UI Windows

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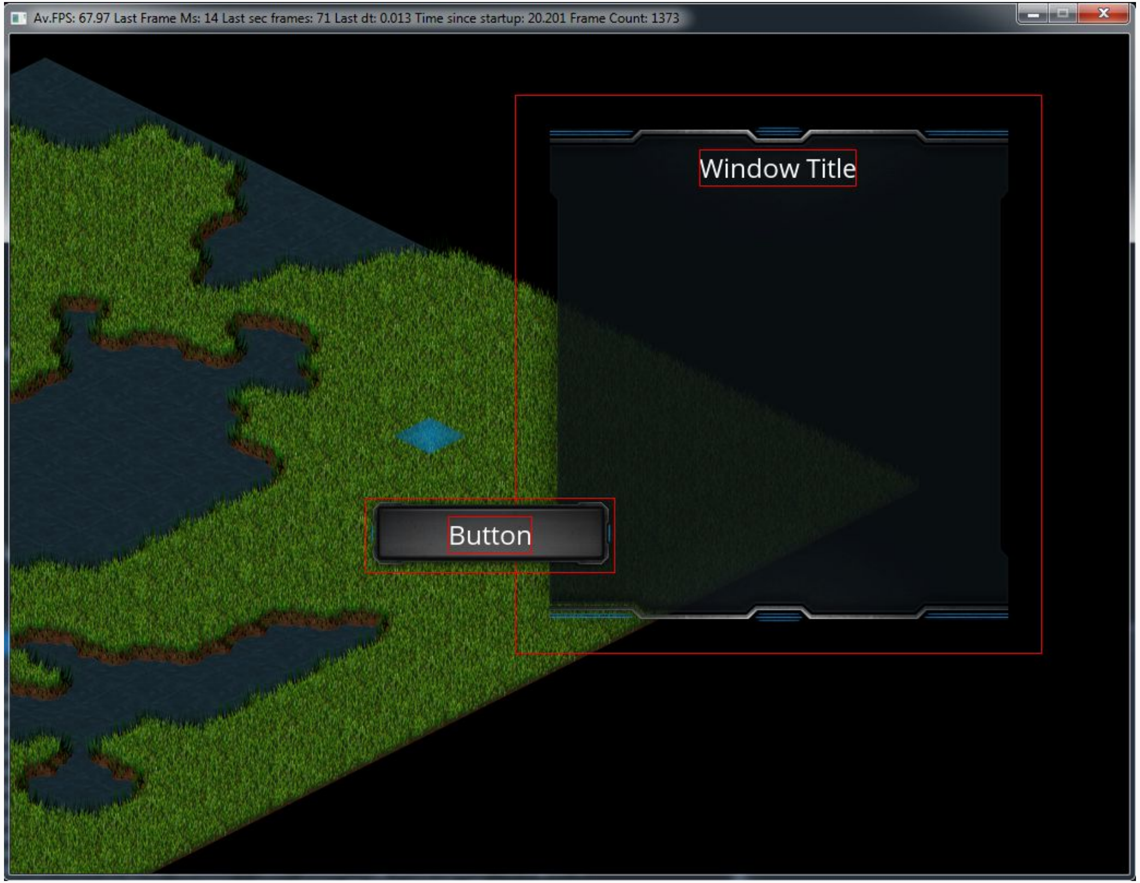
Check solution.exe (press F8 for debug draw)



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Av.FPS: 67.97 Last Frame Ms: 14 Last sec frames: 71 Last dt: 0.013 Time since startup: 20.201 Frame Count: 1373
```

Work in groups

- What would you change for replicating this behavior ?
- Break down in groups and discuss:
  - What is the new functionality here ?
  - What is the **UML** structure to include this new functionality ?

Creating windows

- We have several challenges to overcome here:
    - How to nest UI
    - How to decide the order of UI from Input’s POV
    - … including “invisible” UI elements from Input’s POV
    - Dragging elements with the mouse

Creating windows

- How to nest UI:
  - It’s a **tree** :) … but we will do a very simplistic implementation of a tree
- How to decide the order of UI from Input’s POV
  - It is the inverse order of draw
- … including “invisible” UI elements from Input’s POV
  - All UI elements will have a “interactable” flag
- Dragging elements with the mouse
  - Flag “draggable” that just moves the rectangle with the mouse

TODO 1

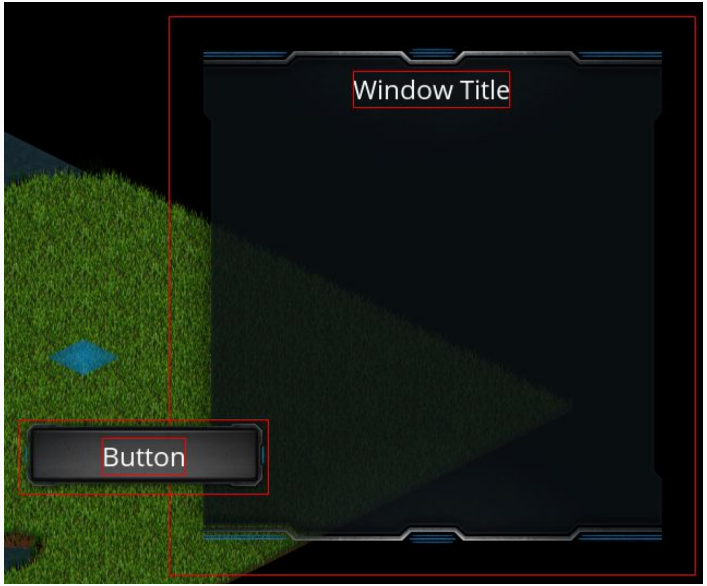
“To nest ui elements into each other simply add a parent”

- UI elements that have parent to NULL mean they work with the screen
- Now each UI element has two set of coordinates: local and screen
- Actually, **UI::rect** should be private!
- New methods: *GetScreenRect() GetLocalRect() GetScreenPos() GetLocalPos() SetLocalPos()*
- Start with *GetScreenPos()*, then adapt the rest of the code

TODO 2

*“Make the **window** image be parent of the **button** image”*

- Then the button label have the button as parent
- And a new window title that has the window as parent



window sprite section in the atlas: {0, 512, 483, 512}

TODO 3

“Make any UI element draggable”

- Just add a flag when you are testing for events
- Then simply **add mouse motion** to UI position
- You should see that you can drag the window
- … but what about the button ? they use the same screen area!

TODO 4

“Create a method that decides which element is under the mouse”

- It should just return the element under mouse cursor
- The can be only one!
- If mouse is under the button, only the button should be selected and not the window

TODO 5

“Now only one UI element may have the mouse hovering them at once”

- Replace your logic of “mouse inside UI rectangle”
- It should be “Am I the UI element that has the mouse ? ask UI Module”
- The result should be that you can drag things independently

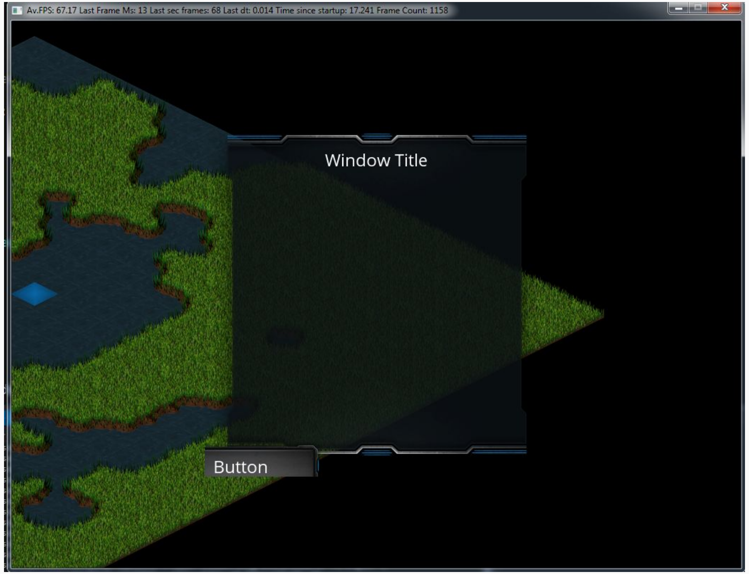
TODO 6

“Add a flag to make each ui element interactive or not”

- The flag should make the UI element not be candidate for mouse hover
- … and ignore all other Input
- When finished make the label of the button not interactable
- … so you can now drag the button from the center

Homework - UPDATE YOUR UML!

- Add “masks” to UI elements:
  - No child element can be seen outside that window
  - The result would be that the button is not drawn outside the window
- Add focus system:
  - Only some UI can receive focus
  - Pressing TAB should cycle



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