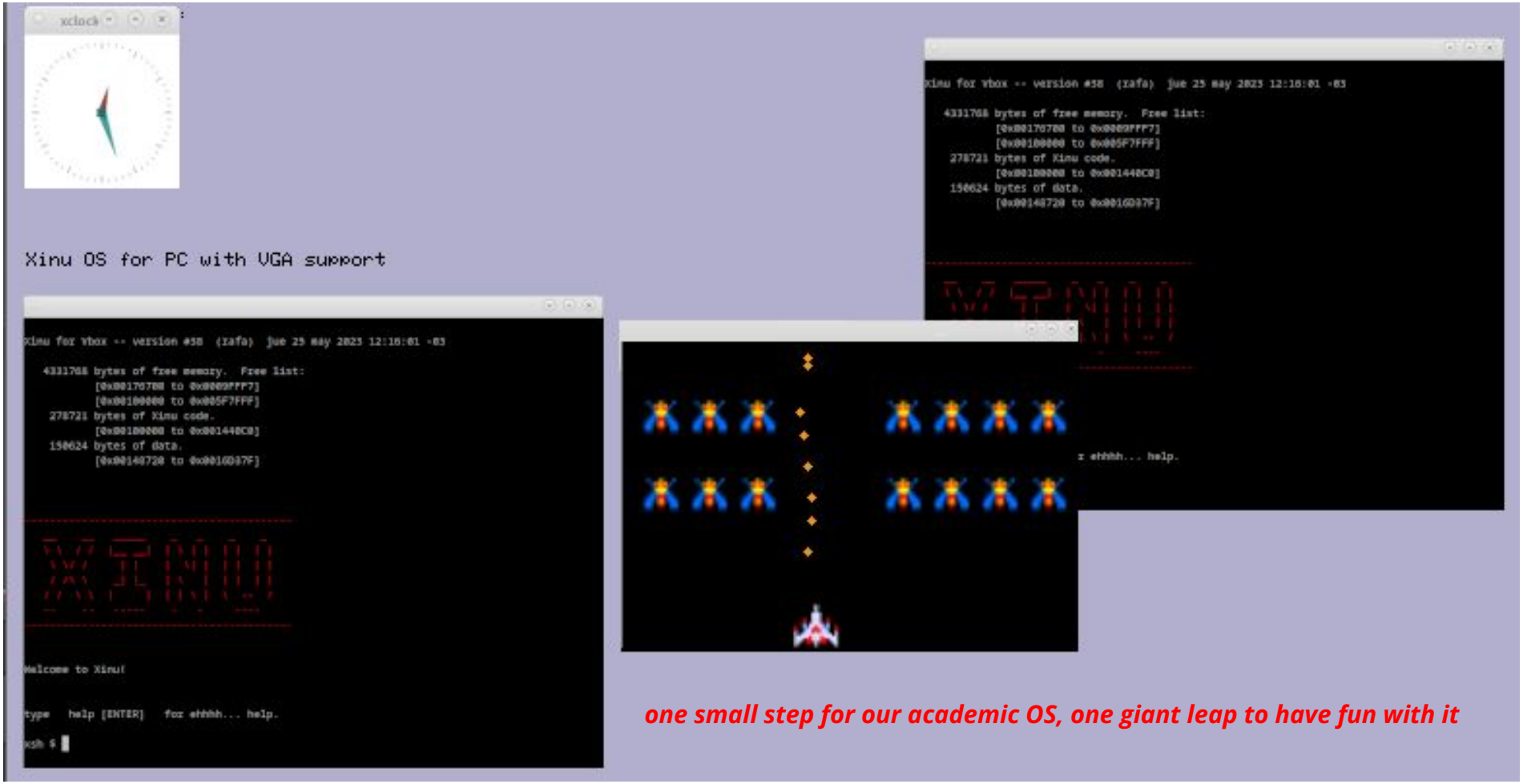
# Xinu Visual Interface for the amd64/x86 PC platform

Purdue - UNCo

# Goals


xclock
Xinu OS for PC with VGA support
Xinu for Vbox -- version #58 (zafa) jue 25 may 2023 12:16:01 -03
4331768 bytes of free memory. Free list:
[0x00170708 to 0x0008FFF7]
[0x00100000 to 0x005F7FFF]
278721 bytes of Xinu code.
[0x00100000 to 0x001448C8]
150624 bytes of data.
[0x00140720 to 0x0016D37F]
Welcome to Xinu!
type help [ENTER] for ehhhh... help.
xsh $




*one small step for our academic OS, one giant leap to have fun with it*

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*extension to the Xinu Operating System,*
*visual interface*

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*This project aims to add an extension to the Xinu Operating System, whose purpose is to provide a visual interface to the OS, running on current PC platform.*

*A second goal is be able to run Xinu OS on REAL notebooks and PCs (no just on QEMU, virtualbox, whatever emulator).*

# What we have, what we need

- *Official Xinu runs on x86 Galileo boards, ARM Beagleboard, virtualbox*
- *We have a qemu/PC initial Xinu OS with draft drivers for GUI*
- *We need some extra pieces to complete the goals*
  - ***The system will consist of a few new drivers** (vga, keyboard, mouse, vtty)*
  - ***Also a GUI layer**, which controls the  windows for different processes running on the visual interface.*
  - ***Finally, we need a** killer app to test everything. Maybe, that **"hello world" application,** which could have the role of "system testing" or "validation testing", is a **virtual terminal** where the Xinu Shell runs without any modification.*

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  ***virtual terminal***

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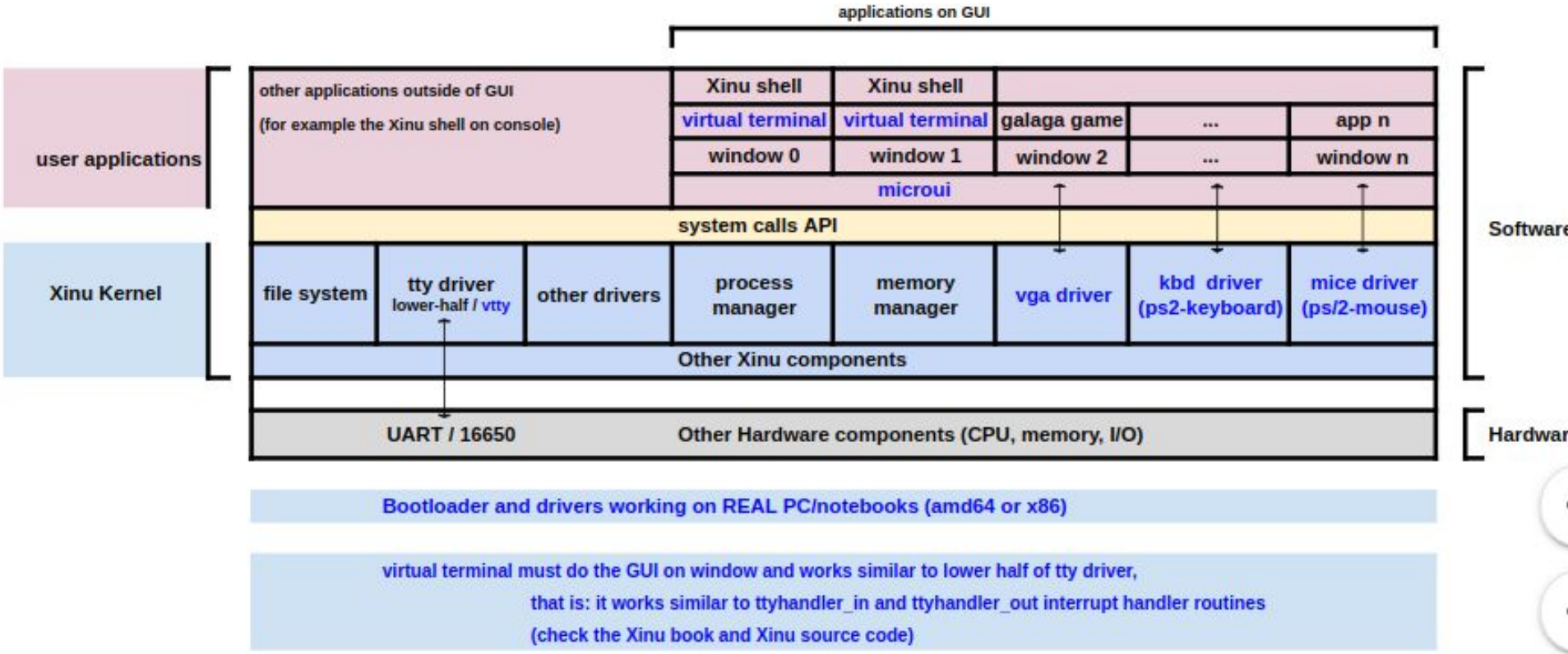
applications on GUI
user applications
other applications outside of GUI
(for example the Xinu shell on console)
Xinu shell
Xinu shell
virtual terminal
virtual terminal
galaga game
...
app n
window 0
window 1
window 2
...
window n
microui
system calls API
Xinu Kernel
file system
tty driver
lower-half / vtty
other drivers
process manager
memory manager
vga driver
kbd driver (ps2-keyboard)
mice driver (ps/2-mouse)
Other Xinu components
UART / 16650
Other Hardware components (CPU, memory, I/O)
Software
Hardwar
Bootloader and drivers working on REAL PC/notebooks (amd64 or x86)
virtual terminal must do the GUI on window and works similar to lower half of tty driver,
that is: it works similar to ttyhandler_in and ttyhandler_out interrupt handler routines
(check the Xinu book and Xinu source code)

# Objectives (*)

- *Finish the VGA driver (easy)*
- *Test this Xinu in different PCs/notebooks (easy to hard)*
  - *(and fix the boot problems) (easy to hard)*
- *Port microui (middle hard) (risky)*
- *Develop a virtual terminal on microui (maybe hardest)*
- *Add vtty to lower-half tty? (a bit hard but short)*
- *Test Xinu Shell on virtual terminal (easy if all is okey)*
- *Document how easy or hard is*
  *to develop an application on microui window*

(*) mostly, if not all, learning and programming tasks

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# Objectives (*)

- *Finish the VGA driver - Jeremias*
- *Test this Xinu in different PCs/notebooks - Franco*
  - *(and fix the boot problems)*
- *Port microui - JianJun - Leonardo - Facundo*
- *Develop a virtual terminal on microui - Jeremias*
- *Add vtty to lower-half tty? - Nika*
- *Test Xinu Shell on virtual terminal (test everything) (fun)*
- *Document how easy or hard is*
  *to develop an application on a microui window*
- *Mouse bug - Jeremias*

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# questions?

# Thanks!. References

- *Xinu Book*
- *Main repository of this project: https://github.com/zrafa/xinu-x86-gui*
- *Microui: https://github.com/rxi/microui*
- *Schematic of flow in unix-pty: https://raw.githubusercontent.com/zrafa/xinu-x86-gui/main/unix-pty.png*