

Vistula, IT Faculty, 2015

Operating Systems

Dmitry A. Zaitsev

<http://daze.ho.ua>

Lecture 1:

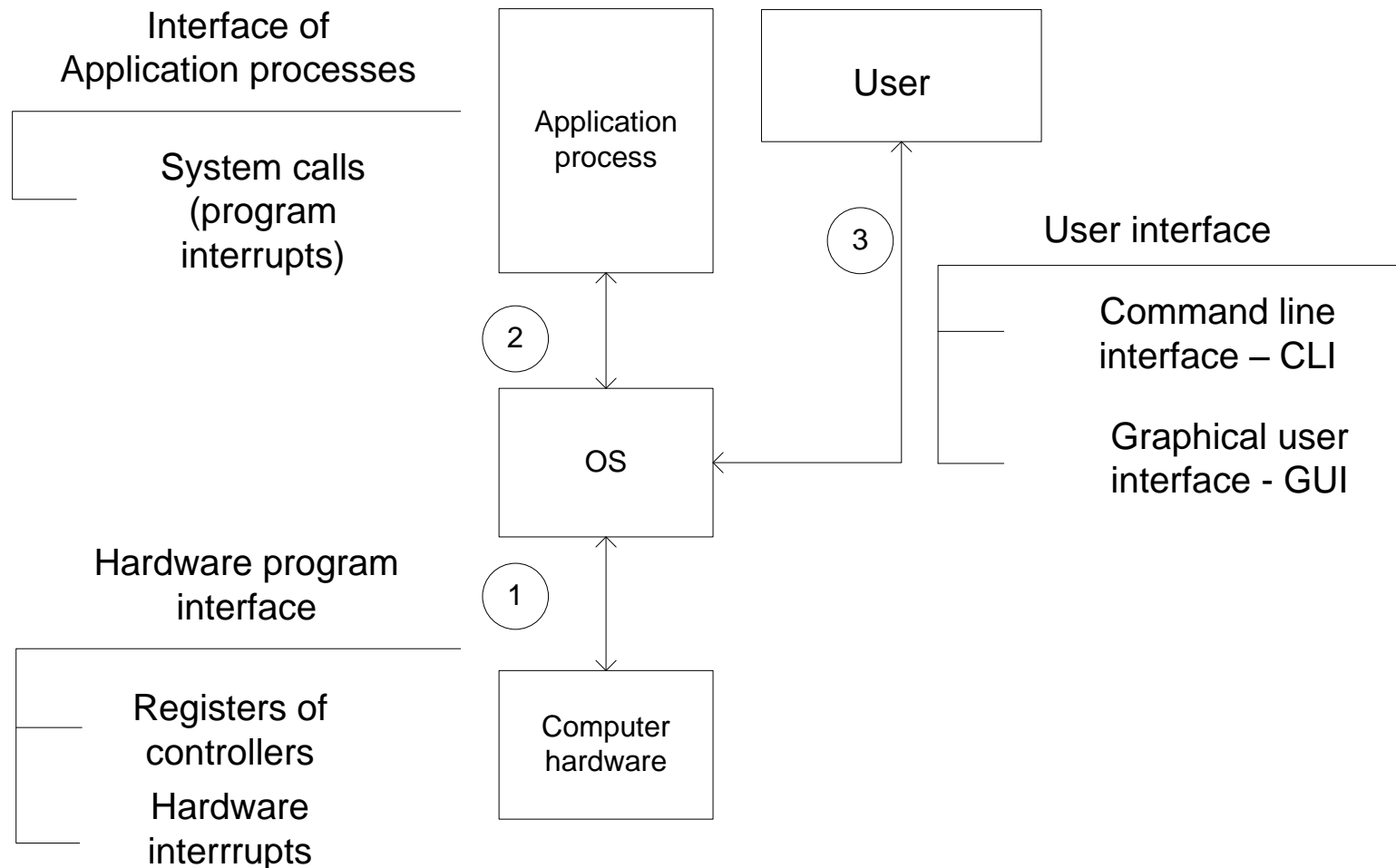
Interfaces of OS.

Resources and Operations

Definitions of OS

- Operating system is a software complex for ***control*** of computer resources and ***interaction*** with hardware, programs, and users.
- Operating system is an extension of hardware.
- Operating system is an instrument to launch and run user programs on computer and store user data.
- etc

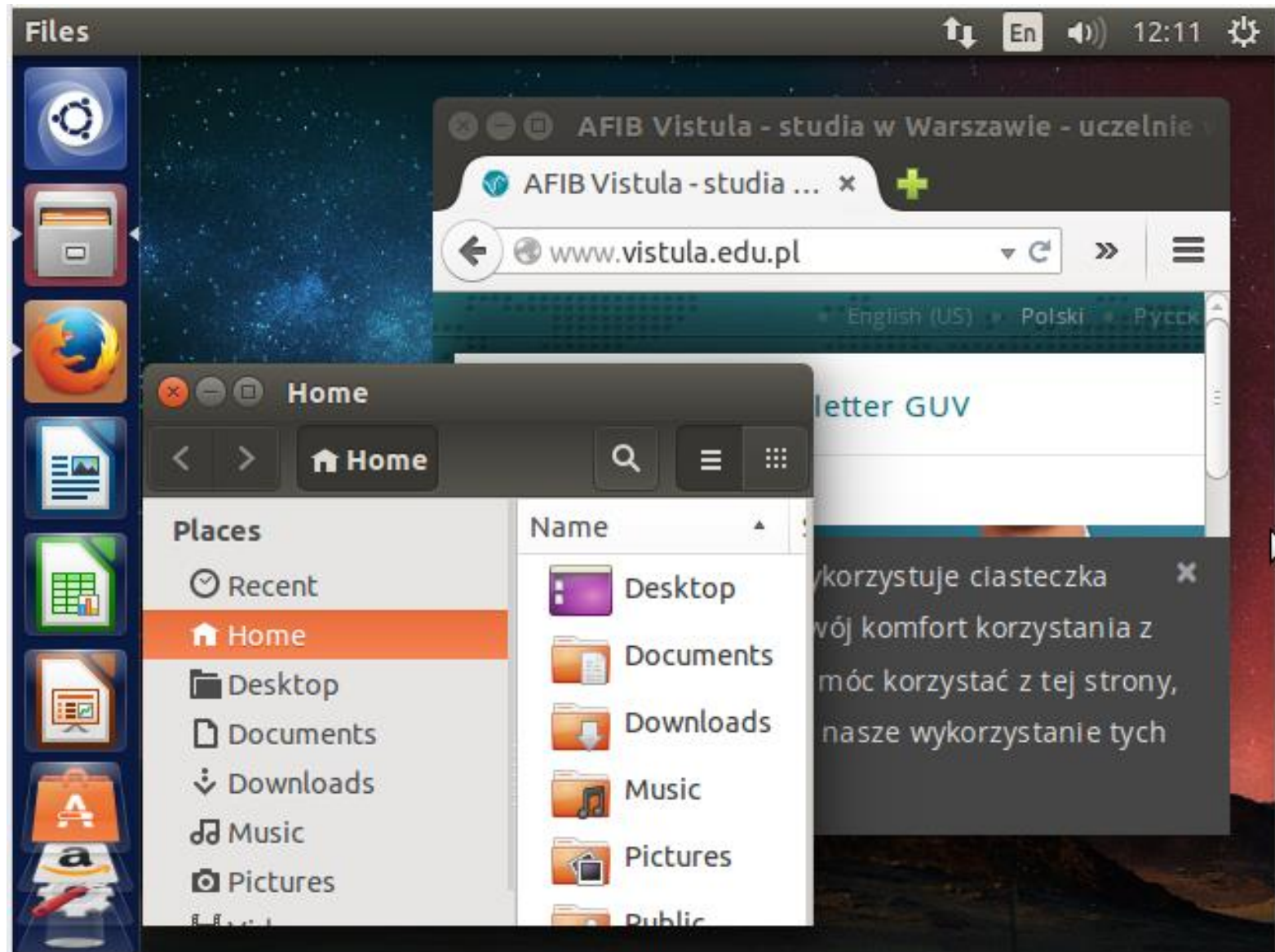
Interfaces of OS



GUI

- Desktop, icons and windows
- Mouse and touchpad
- Menu and hot keys
- System feed-back: pop-up windows, hints
- MS Windows
- Unix/Linux – XWindow
- Unix/Linux – Gnome, KDE, etc

Linux desktop



CLI

- Unix/Linux – Shell: sh, csh, ksh, bash, etc
- MS-DOS for Windows
- Principles of CLI: command, arguments, and options
- Batch files and scripts
- Advantages of CLI
- Modern script languages: Perl, Ruby, etc

Linux bash

```
Ubuntu 14.04.2 LTS daze-fast tty1
```

```
daze-fast login: daze
```

```
Password:
```

```
Welcome to Ubuntu 14.04.2 LTS (GNU/Linux 3.16.0-34-generic i686)
```

```
* Documentation:  https://help.ubuntu.com/
```

```
0 packages can be updated.
```

```
0 updates are security updates.
```

```
The programs included with the Ubuntu system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.
```

```
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by  
applicable law.
```

```
daze@daze-fast:~$ pwd
```

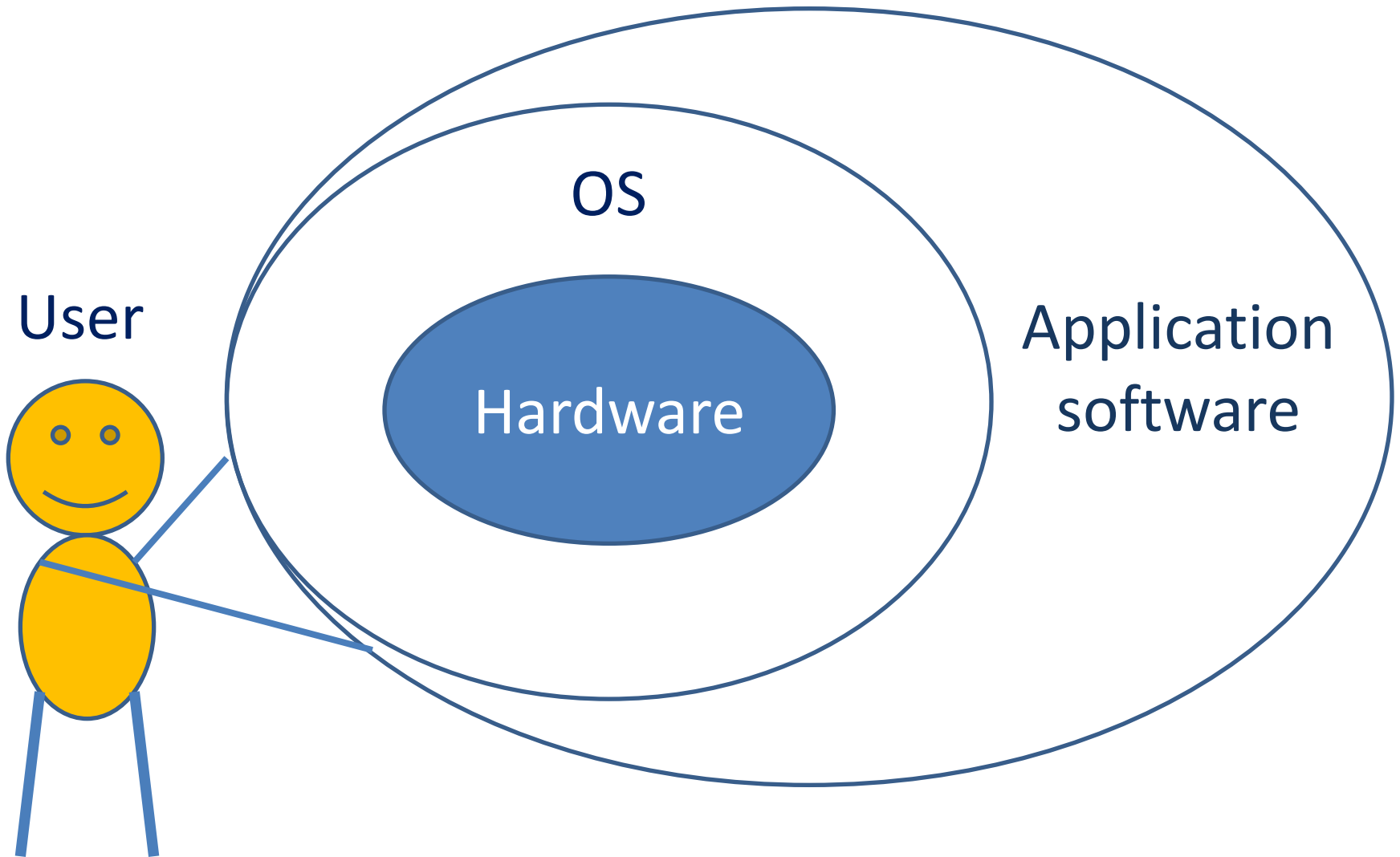
```
/home/daze
```

```
daze@daze-fast:~$ ls
```

```
Desktop    Downloads    Music        Public      Videos  
Documents  examples.desktop  Pictures    Templates
```

```
daze@daze-fast:~$
```

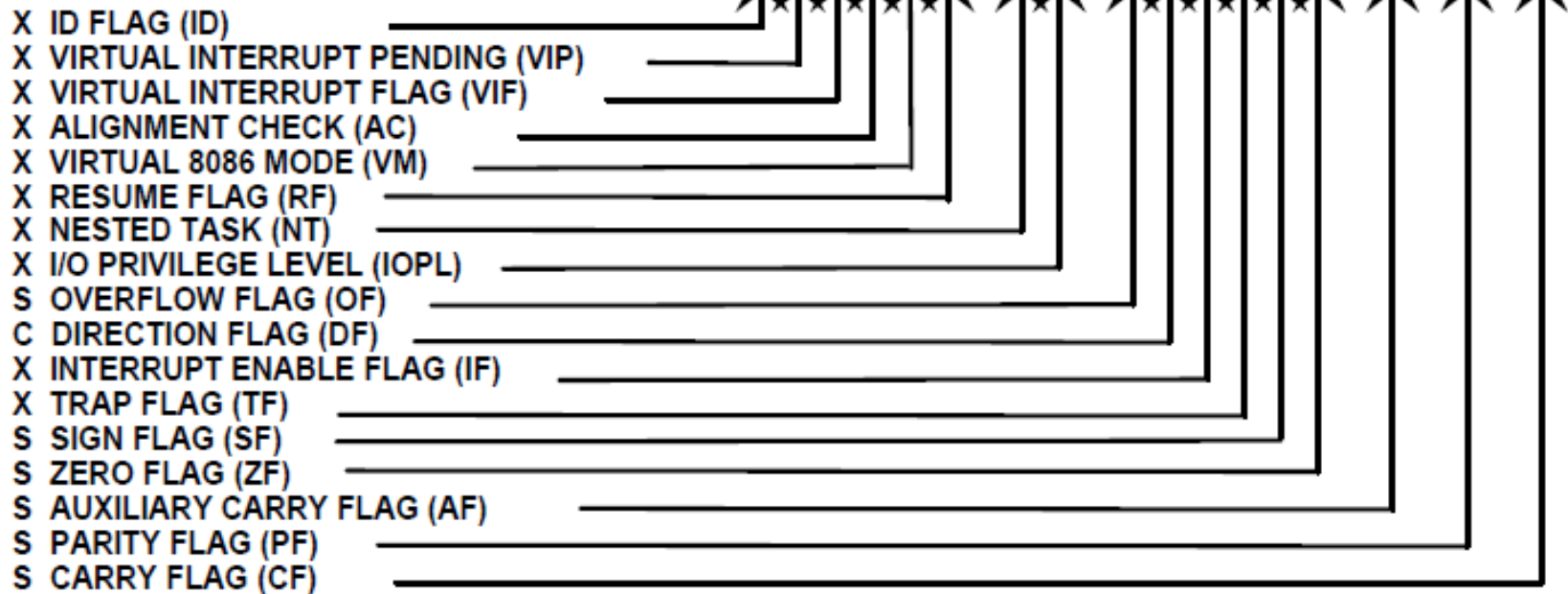
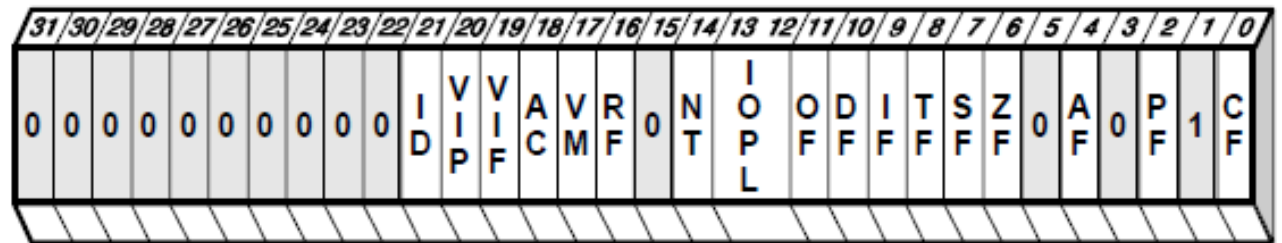
OS as an extension of hardware



Interfaces with hardware

- Processor Status Word
- Modes of Processor work
- I/O ports
- Hardware interrupts
- Interrupt vectors

PSW of Pentium



S INDICATES A STATUS FLAG
 C INDICATES A CONTROL FLAG
 X INDICATES A SYSTEM FLAG

Resources of computer

- Processors
- Memory
- Devices
- Information

Operation on resources

- Allocate
- Deallocate (free)
- Track (suprvice)
- Schedule (plan)

Formula of OS: 4x4

	Processors	Memory	Devices	Information
Allocate	PA	MA	DA	IA
Free	FP	FM	FD	FI
Track	TP	TM	TD	TI
Schedule	SP	SM	SD	SI

Concept of a process

