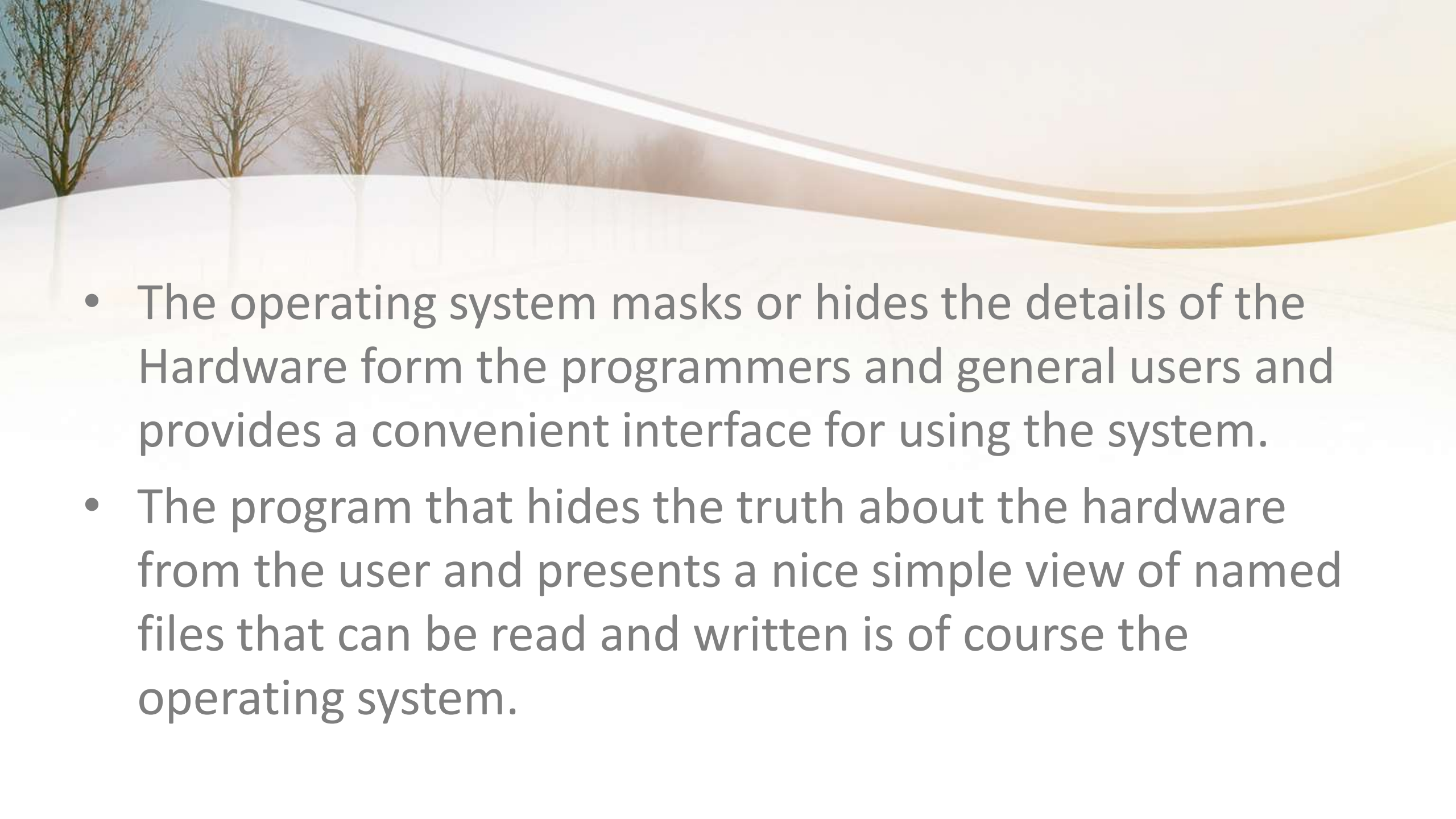
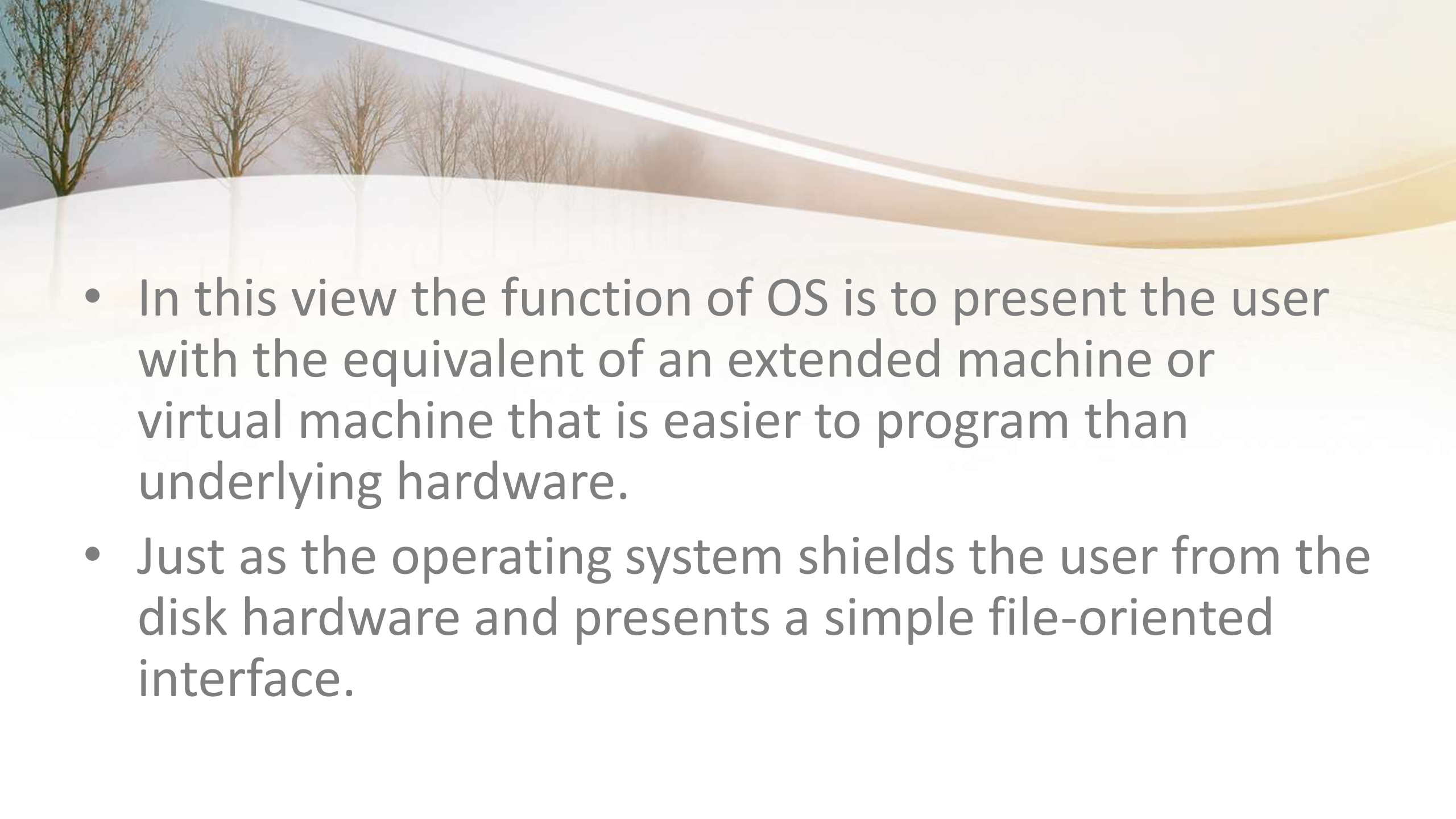
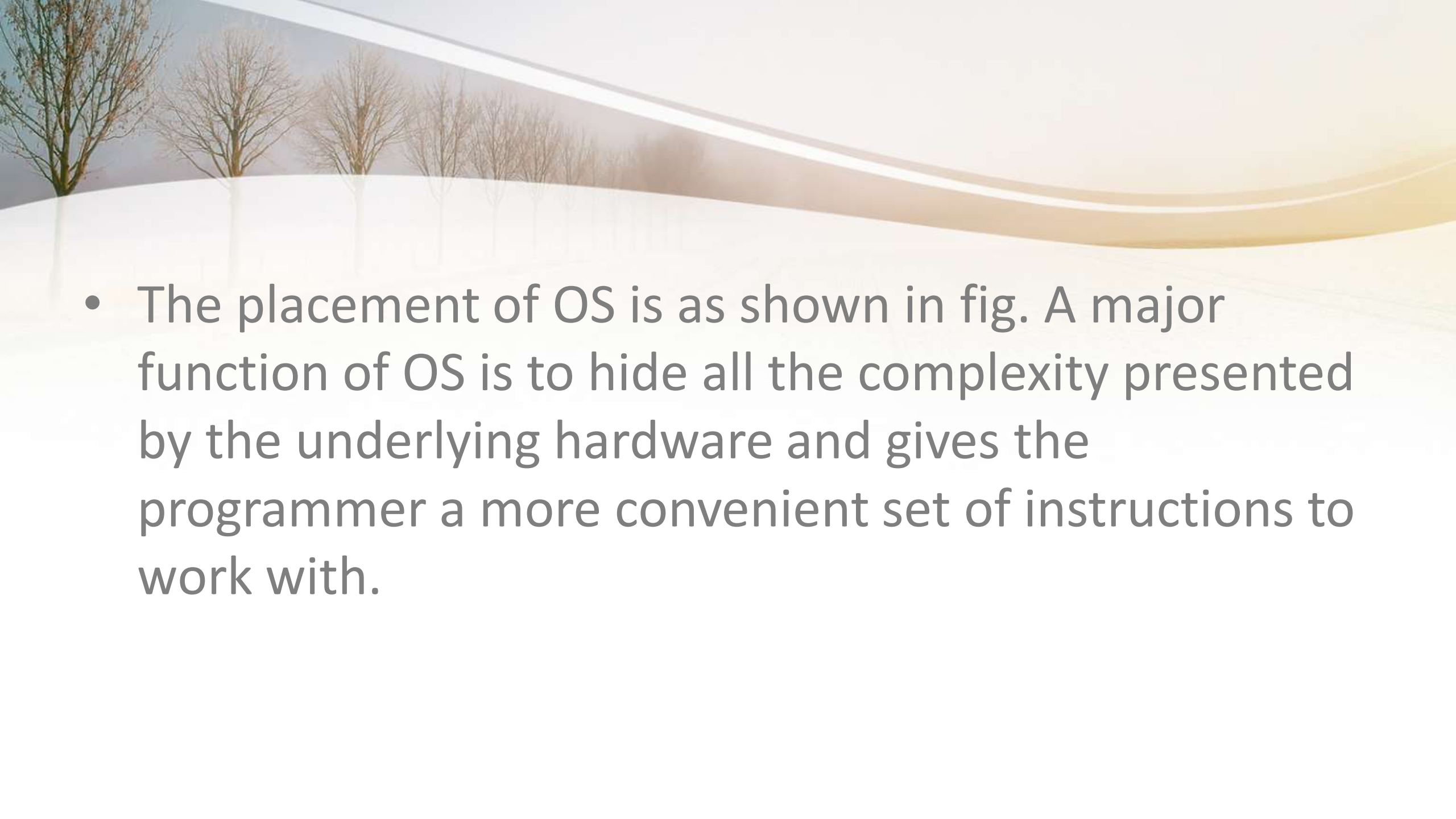


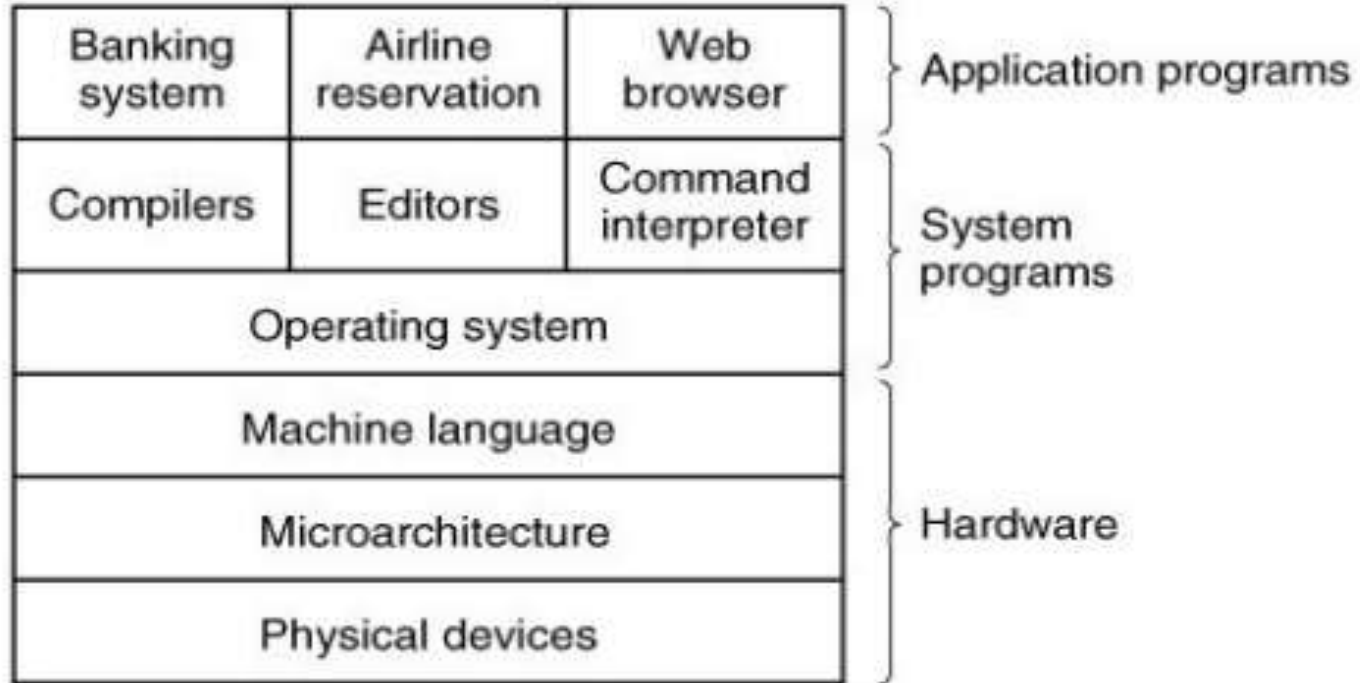
# Extended Machine Concept



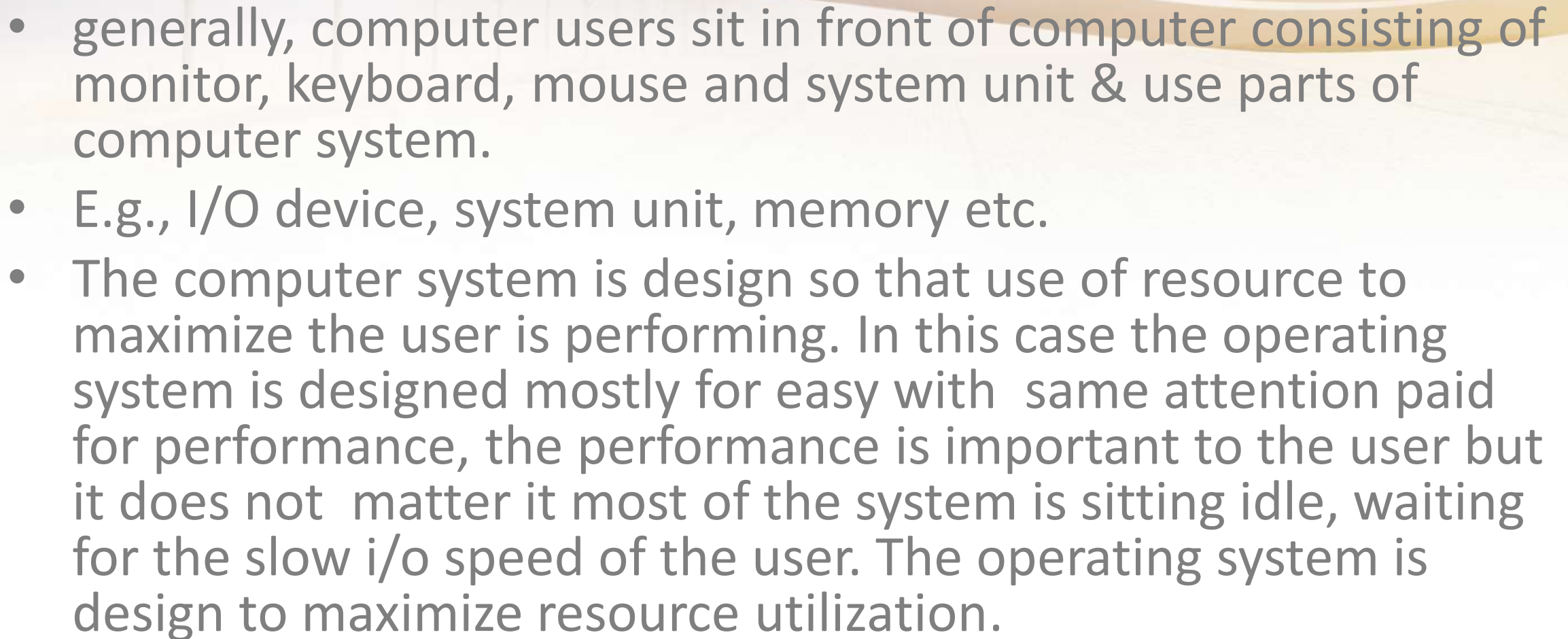
- 
- The operating system masks or hides the details of the Hardware from the programmers and general users and provides a convenient interface for using the system.
  - The program that hides the truth about the hardware from the user and presents a nice simple view of named files that can be read and written is of course the operating system.

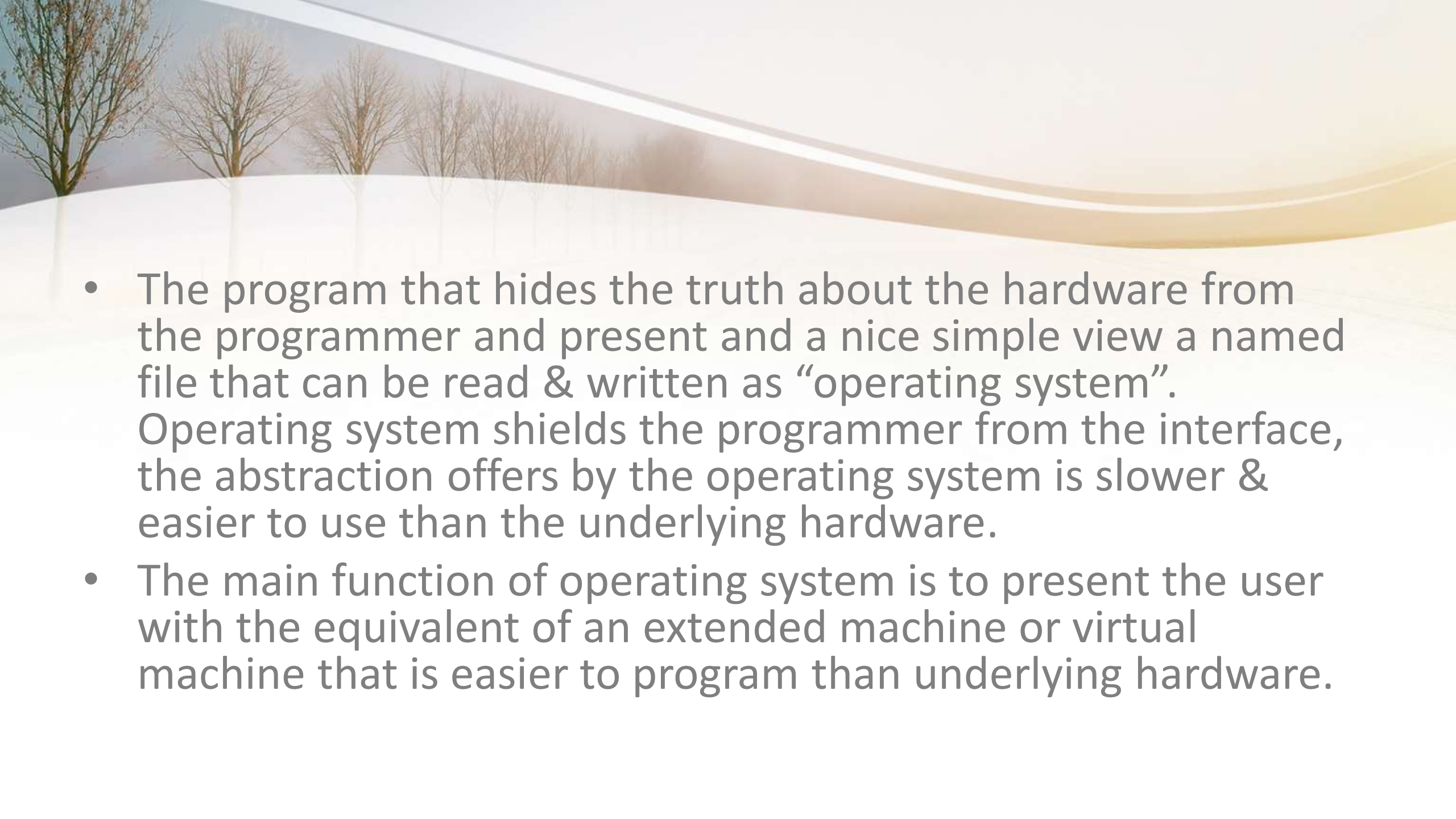
- 
- In this view the function of OS is to present the user with the equivalent of an extended machine or virtual machine that is easier to program than underlying hardware.
  - Just as the operating system shields the user from the disk hardware and presents a simple file-oriented interface.

- 
- The placement of OS is as shown in fig. A major function of OS is to hide all the complexity presented by the underlying hardware and gives the programmer a more convenient set of instructions to work with.



*Fig1.2: Computer system consists of Hardware, system program and application program*

- 
- generally, computer users sit in front of computer consisting of monitor, keyboard, mouse and system unit & use parts of computer system.
  - E.g., I/O device, system unit, memory etc.
  - The computer system is design so that use of resource to maximize the user is performing. In this case the operating system is designed mostly for easy with same attention paid for performance, the performance is important to the user but it does not matter it most of the system is sitting idle, waiting for the slow i/o speed of the user. The operating system is design to maximize resource utilization.

- 
- The program that hides the truth about the hardware from the programmer and present and a nice simple view a named file that can be read & written as “operating system”. Operating system shields the programmer from the interface, the abstraction offers by the operating system is slower & easier to use than the underlying hardware.
  - The main function of operating system is to present the user with the equivalent of an extended machine or virtual machine that is easier to program than underlying hardware.





# Extended Machine :-

- Top-down (user/application centred) view
- • “Beautification Principle” – OS hides the implementation details
- • Example: the file system of a computer vs direct programming of disk controller
- • A Standardised “Virtual Machine” across different physical machines – allows easy program distribution
- Example: – reading/writing from a floppy disk requires to know:
  - 16 commands, 13 parameters packed in 9 bytes, address of disk block, recording mode, gap spacing, deleted data address mark, whether the motor is on or off and etc.
  - How stuff works: <http://computer.howstuffworks.com/floppy-diskdrive.htm>
  - Some code: <http://linuxgazette.net/issue77/krishnakumar.html>

# Extended Machine

- Provides – stable: doesn't crash – portable: can run code on more than one type of machine – reliable: always reacts in the same way – safe: doesn't do something dangerous – well-behaved: acts in a proper manner environment
- • Computer “appears” to more than it is – “appears” to be many processors – “appears” to be many, large memories
- • Features: – threads, processes, files, communication channels



