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[NPTEL \(https://swayam.gov.in/explorer?ncCode=NPTEL\)](https://swayam.gov.in/explorer?ncCode=NPTEL) » Operating System Fundamentals (course)

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Course outline

About NPTEL ()

How does an NPTEL online course work? ()

Week 0 ()

Week 1 : Assignment 1

The due date for submitting this assignment has passed.

Due on 2024-08-07, 23:59 IST.

Assignment submitted on 2024-08-06, 18:27 IST

1) Which of the following is not the responsibility of the operating system?

1 point

- ☐ (A) Resource management
- ☐ (B) Control the program execution
- ☐ (C) Creation of a user-friendly environment
- ☐ (D) Network management
- ☒ (E) Compiler design

Week 1 ()

☒ Lecture 1 : Introduction
(unit?
unit=17&lesson=18)

☐ Lecture 2 : Introduction
(Contd.) (unit?
unit=17&lesson=19)

☐ Lecture 3 : Introduction
(Contd.) (unit?
unit=17&lesson=20)

☐ Lecture 4 : Introduction
(Contd.) (unit?
unit=17&lesson=21)

☐ Lecture 5 : Introduction
(Contd.) (unit?
unit=17&lesson=22)

☒ Lecture Materials (unit?
unit=17&lesson=23)

☐ Feedback for Week 1
(unit?
unit=17&lesson=24)

☒ **Quiz: Week 1 :
Assignment 1
(assessment?
name=174)**

☐ Assignment 1 Solution
(unit?
unit=17&lesson=117)

Week 2 ()

Yes, the answer is correct.

Score: 1

Accepted Answers:

(E) *Compiler design*

2) Choose the incorrect option.

1 point

- ☐ (A) System programs are associated with the operating system
- ☐ (B) System programs are not necessarily part of the kernel
- ☐ (C) System programs interact with the kernel to manage hardware resources
- ☐ (D) System programs help user to manage the files
- ☒ (E) System programs degrade the performance of the computer system

Yes, the answer is correct.

Score: 1

Accepted Answers:

(E) *System programs degrade the performance of the computer system*

3) Which of the following is not an example of a system program?

1 point

- ☐ (A) Disk cleanup tool
- ☐ (B) Antivirus program
- ☐ (C) Text editor
- ☒ (D) Web browser
- ☐ (E) GRUB (Grand Unified Bootloader) loader

Yes, the answer is correct.

Score: 1

Accepted Answers:

(D) *Web browser*

4) What is the function of the command interpreter?

1 point

- ☐ (A) Translating program in a high-level language into machine code
- ☐ (B) Memory management
- ☒ (C) Execute the user-specified command

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- ☐ (D) Controlling input/output operations
- ☐ (E) Managing file system operations

Yes, the answer is correct.

Score: 1

Accepted Answers:

(C) *Execute the user-specified command*

5) Which of the following is not part of a device controller?

1 point

- ☐ (A) Data Register
- ☒ (B) RAM
- ☐ (C) Control Register
- ☐ (D) Status register
- ☐ (E) DMA controller

Yes, the answer is correct.

Score: 1

Accepted Answers:

(B) *RAM*

6) Direct Memory Access (DMA) technique is used for

1 point

- ☐ (A) Managing CPU clock speeds
- ☒ (B) Transferring data between peripheral devices and memory without CPU intervention
- ☐ (C) Managing hardware resources
- ☐ (D) Managing the interrupts
- ☐ (E) Executing the programs

Yes, the answer is correct.

Score: 1

Accepted Answers:

(B) *Transferring data between peripheral devices and memory without CPU intervention*

7) Which of the following components is closest to the CPU?

1 point

- ☐ (A) RAM

- ☒ (B) L1 cache
- ☐ (C) L2 cache
- ☐ (D) L3 cache
- ☐ (E) Secondary storage

Yes, the answer is correct.

Score: 1

Accepted Answers:

(B) L1 cache

8) Which of the following is incorrect for an interactive Operating System (OS)?

1 point

- ☒ (A) It is designed for batch processing
- ☐ (B) It is designed to achieve a response time as low as possible
- ☐ (C) It is designed to respond promptly to user inputs
- ☐ (D) It is suitable for multi-programming environment
- ☐ (E) It is suitable for multi-user system

Yes, the answer is correct.

Score: 1

Accepted Answers:

(A) It is designed for batch processing

9) Which of the following components do not need a device driver?

1 point

- ☐ (A) Monitor
- ☒ (B) RAM
- ☐ (C) Printer
- ☐ (D) Mouse
- ☐ (E) Keyboard

Yes, the answer is correct.

Score: 1

Accepted Answers:

(B) RAM

10) An interrupt may not occur when

1 point

- ☐ (A) a hardware component encounters an error or failure
- ☐ (B) a data transfer between a peripheral device and memory is completed
- ☐ (C) a user program requests to execute a system call
- ☐ (D) a disk operation is completed
- ☒ (E) the computer system intentionally turns off the interrupts

Yes, the answer is correct.

Score: 1

Accepted Answers:

(E) the computer system intentionally turns off the interrupts

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Course outline

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How does an NPTEL
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Week 0 ()

Week 2 : Assignment 2

The due date for submitting this assignment has passed.

Due on 2024-08-07, 23:59 IST.

Assignment submitted on 2024-08-06, 18:28 IST

1) What is the best activity performed by the operating system for process management?

1 point

- ☐ (A) Allocation of memory to different processes.
- ☐ (B) Management of input and output operations.
- ☒ (C) Scheduling of processes to improve the system throughput.
- ☐ (D) Handling of system errors.
- ☐ (E) Handling of system interrupts.

Week 1 ()**Week 2 ()**

☐ Lecture 6 : Introduction (Contd.) (unit? unit=25&lesson=26)

☒ Lecture 7 : Operating System Structures (unit? unit=25&lesson=27)

☐ Lecture 8 : Operating System Structures (Contd.) (unit? unit=25&lesson=28)

☐ Lecture 9 : Operating System Structures (Contd.) (unit? unit=25&lesson=29)

☐ Lecture 10 : Operating System Structures (Contd.) (unit? unit=25&lesson=30)

☐ Lecture Materials (unit? unit=25&lesson=31)

☐ Feedback for Week 2 (unit? unit=25&lesson=32)

☒ **Quiz: Week 2 : Assignment 2 (assessment? name=175)**

Yes, the answer is correct.

Score: 1

Accepted Answers:

(C) *Scheduling of processes to improve the system throughput.*

2) The operating system executes the memory management for

1 point

- ☐ (A) handling the interrupts.
- ☐ (B) improving the system throughput.
- ☐ (C) interprocess communication among two processes.
- ☐ (D) managing user interfaces.
- ☒ (E) storage management.

No, the answer is incorrect.

Score: 0

Accepted Answers:

(B) *improving the system throughput.*

3) Choose the correct statement.

1 point

- ☒ (A) A device driver converts data to be printed in a format that a printer can understand.
- ☐ (B) A device driver connects the computer system to the Internet.
- ☐ (C) A device driver is not useful for modern operating systems.
- ☐ (D) A device driver only handles communication between the operating system and storage devices.
- ☐ (E) A device driver executes operating system functions manually.

Yes, the answer is correct.

Score: 1

Accepted Answers:

(A) *A device driver converts data to be printed in a format that a printer can understand.*

4) The caching mechanism is used in computer systems to

1 point

- ☐ (A) allocate memory to different processes.
- ☒ (B) store frequently accessed data in a temporary storage area for quicker access.
- ☐ (C) ensure communication between memory and I/O devices.

☐ Assignment 2 Solution
(unit?
unit=25&lesson=118)

Week 3 ()

Week 4 ()

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- ☐ (D) manage network protocols and data transmission.
☐ (E) handel the system error.

Yes, the answer is correct.

Score: 1

Accepted Answers:

(B) store frequently accessed data in a temporary storage area for quicker access.

5) A system call is

1 point

- ☒ (A) the interface between a user program and the operating system.
☐ (B) executed in user mode.
☐ (C) the memory manager in a computer system.
☐ (D) used to perform only I/O operations.
☐ (E) used to perform only inter-process communication.

Yes, the answer is correct.

Score: 1

Accepted Answers:

(A) the interface between a user program and the operating system.

6) Which system call creates a shared memory segment in Unix-like operating systems?

1 point

- ☐ (A) shmdt()
☒ (B) shmget()
☐ (C) pipe()
☐ (D) shmctl()
☐ (E) shmsnd()

Yes, the answer is correct.

Score: 1

Accepted Answers:

(B) shmget()

7) Which of the following is not a feature of the MS-DOS operating system?

1 point

- ☐ (A) Command-Line Interface (CLI).

- ☐ (B) Single-tasking.
- ☐ (C) File Allocation Table (FAT) file system.
- ☒ (D) Multi-tasking.
- ☐ (E) Device Drivers

Yes, the answer is correct.

Score: 1

Accepted Answers:

(D) Multi-tasking.

8) Which of the following is not a core feature of the UNIX-like operating system?

1 point

- ☐ (A) Multi-user.
- ☐ (B) Mult-programming.
- ☐ (C) Process management.
- ☐ (D) Error handling.
- ☒ (E) Batch Processing.

Yes, the answer is correct.

Score: 1

Accepted Answers:

(E) Batch Processing.

9) The umask() system call is used to

1 point

- ☒ (A) set the file creation mode mask for processes.
- ☐ (B) allocate memory dynamically for new processes.
- ☐ (C) control the execution priority of processes.
- ☐ (D) managing inter-process communication.
- ☐ (E) release the resources upon completion of the execution of a process.

Yes, the answer is correct.

Score: 1

Accepted Answers:

(A) set the file creation mode mask for processes.

10) The message-passing model allows processes to communicate

1 point

- ☐ (A) by sharing a common memory region.
- ☒ (B) by sending and receiving messages through the operating system.
- ☐ (C) by directly modifying each other's memory.
- ☐ (D) through a centralized messaging server.
- ☐ (E) using hardware interrupts.

Yes, the answer is correct.

Score: 1

Accepted Answers:

(B) by sending and receiving messages through the operating system.

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Course outline

About NPTEL ()

How does an NPTEL online course work? ()

Week 0 ()

Week 3 : Assignment 3

The due date for submitting this assignment has passed.

Due on 2024-08-14, 23:59 IST.

Assignment submitted on 2024-08-07, 22:12 IST

1) In the modular design of an operating system, the layer 0 represents

1 point

- ☐ (A) user interface
- ☒ (B) hardware
- ☐ (C) firmware
- ☐ (D) software
- ☐ (E) process

Week 1 ()**Week 2 ()****Week 3 ()**

- ☐ Lecture 11 : Operating System Structures (Contd.) (unit? unit=33&lesson=34)
- ☐ Lecture 12 : Processes (unit? unit=33&lesson=35)
- ☐ Lecture 13 : Processes (Contd.) (unit? unit=33&lesson=36)
- ☐ Lecture 14 : Processes (Contd.) (unit? unit=33&lesson=37)
- ☐ Lecture 15 : Processes (Contd.) (unit? unit=33&lesson=38)
- ☐ Lecture Materials (unit? unit=33&lesson=39)
- ☐ Feedback for Week 3 (unit? unit=33&lesson=40)

● Quiz: Week 3 : Assignment 3 (assessment? name=177)

Yes, the answer is correct.

Score: 1

Accepted Answers:

(B) *hardware*

2) Which of the following operating systems is not based on microkernel system structure?

1 point

- ☐ (A) Mach
- ☐ (B) MINIX
- ☐ (C) HURD
- ☐ (D) QNX
- ☒ (E) UNIX

Yes, the answer is correct.

Score: 1

Accepted Answers:

(E) *UNIX*

3) The Android operating system is primarily based on the

1 point

- ☐ (A) Windows
- ☐ (B) iOS
- ☒ (C) Linux
- ☐ (D) FreeBSD
- ☐ (E) UNIX

Yes, the answer is correct.

Score: 1

Accepted Answers:

(C) *Linux*

4) Which of the following is the main function of a bootstrap loader?

1 point

- ☐ (A) Manage hardware resources
- ☒ (B) Load and execute the operating system kernel
- ☐ (C) Provide a graphical user interface

☐ Assignment 3 Solution
(unit?
unit=33&lesson=119)

Week 4 ()

Week 5 ()

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- ☐ (D) Handle user authentication
☐ (E) Manage network connections

Yes, the answer is correct.

Score: 1

Accepted Answers:

(B) Load and execute the operating system kernel

5) Which of the following system calls is used to create a new process in Unix-like operating systems?

1 point

- ☒ (A) fork()
☐ (B) exec()
☐ (C) create()
☐ (D) spawn()
☐ (E) process()

Yes, the answer is correct.

Score: 1

Accepted Answers:

(A) fork()

6) Which of the following is not an attribute of a process?

1 point

- ☐ (A) Process ID
☐ (B) Program counter value
☐ (C) Priority information
☐ (D) Scheduling information
☒ (E) File size

Yes, the answer is correct.

Score: 1

Accepted Answers:

(E) File size

7) Which of the following is not included in the process control block?

1 point

- ☐ (A) Process state and priority

- ☐ (B) File descriptors and environment variables
- ☐ (C) Program counter and stack pointer
- ☐ (D) Memory management information
- ☒ (E) Process termination time

Yes, the answer is correct.

Score: 1

Accepted Answers:

(E) Process termination time

8) Which of the following is not a responsibility of the short-term scheduler?

1 point

- ☐ (A) Allocating CPU to processes
- ☐ (B) Managing process states
- ☐ (C) Selecting process from ready queue.
- ☒ (D) Handling process synchronization
- ☐ (E) Implementing process scheduling policies

Yes, the answer is correct.

Score: 1

Accepted Answers:

(D) Handling process synchronization

9) Which of the following is an invalid reason that a process enters the waiting state?

1 point

- ☐ (A) The process requests input or output operations.
- ☐ (B) The process requires a resource that is currently unavailable.
- ☐ (C) The process is waiting for an event or signal from another process.
- ☐ (D) The parent process is waiting for one or more of its child processes to complete execution.
- ☒ (E) The process requests some memory, and the request is granted.

Yes, the answer is correct.

Score: 1

Accepted Answers:

(E) The process requests some memory, and the request is granted.

10) Which of the following is the primary function of the long-term scheduler?

1 point

- ☐ (A) Allocating CPU to processes
- ☒ (B) Manage the degree of multiprogramming
- ☐ (C) Managing process states
- ☐ (D) Handling process synchronization
- ☐ (E) Implementing process scheduling policies

Yes, the answer is correct.

Score: 1

Accepted Answers:

(B) Manage the degree of multiprogramming