فـا يـنـل ا لـعـمـر و 451

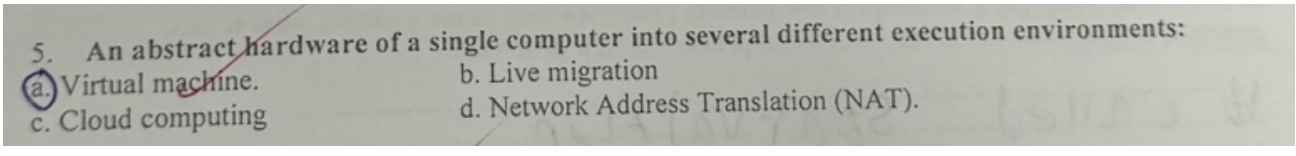
2023/12/28

4006

[اضغط هنا](#) عشان تدخل على الملف بcanva ويكون مرتب , للاسف نسخة ال pdf تكون محيوسه حتى الخط شين

السؤال الاول 5 اختيارات [5 درجات] :

1-



2- Which of the following has different size ? :

A. Program pages

B. Program segment

C. Program frames

D. All answers ✅

3- Intruder sits in data flow, masquerading as sender to receiver and vice versa:

A. Masquerading

B. Breach of integrity

C. Man-in-the-middle attack ✅

D. Session hijacking

4-Unauthorized modification of data leads to :

A. Breach of confidentiality

B. Breach of integrity✅

C. Breach of availability

D. Denial of service

5- نسيته جايب من برا النماذج



السؤال الثاني 5 صح وخطا [5 درجات] :

1- Each OS has its own I/O subsystem structures and driver frameworks : true

2- Binary semaphore contains an integer value that can range over an unrestricted domain : false

3- a port scanning is a Program that initiates a security incident under certain circumstances : false

4- Block and stack methods limit the number or length of parameters being passed : false

5- نسيته



السؤال الثالث :

A. [5 marks]

جاب نفس السؤال ذا لكن حدد لك الاولويه لكل process والناتج = 13.25

(3+24+26)/4 = 13.25

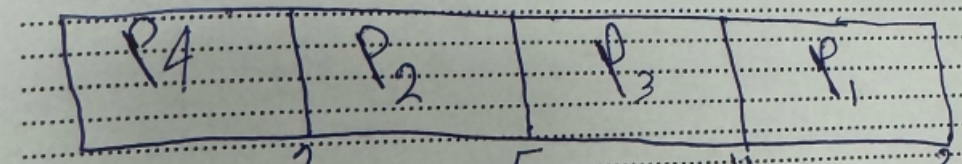
Question 5, =6 Marks

Consider the following table:

Process	Duration (Burst time)
P1	21 4
P2	3 2
P3	6 3
P4	2 1

6

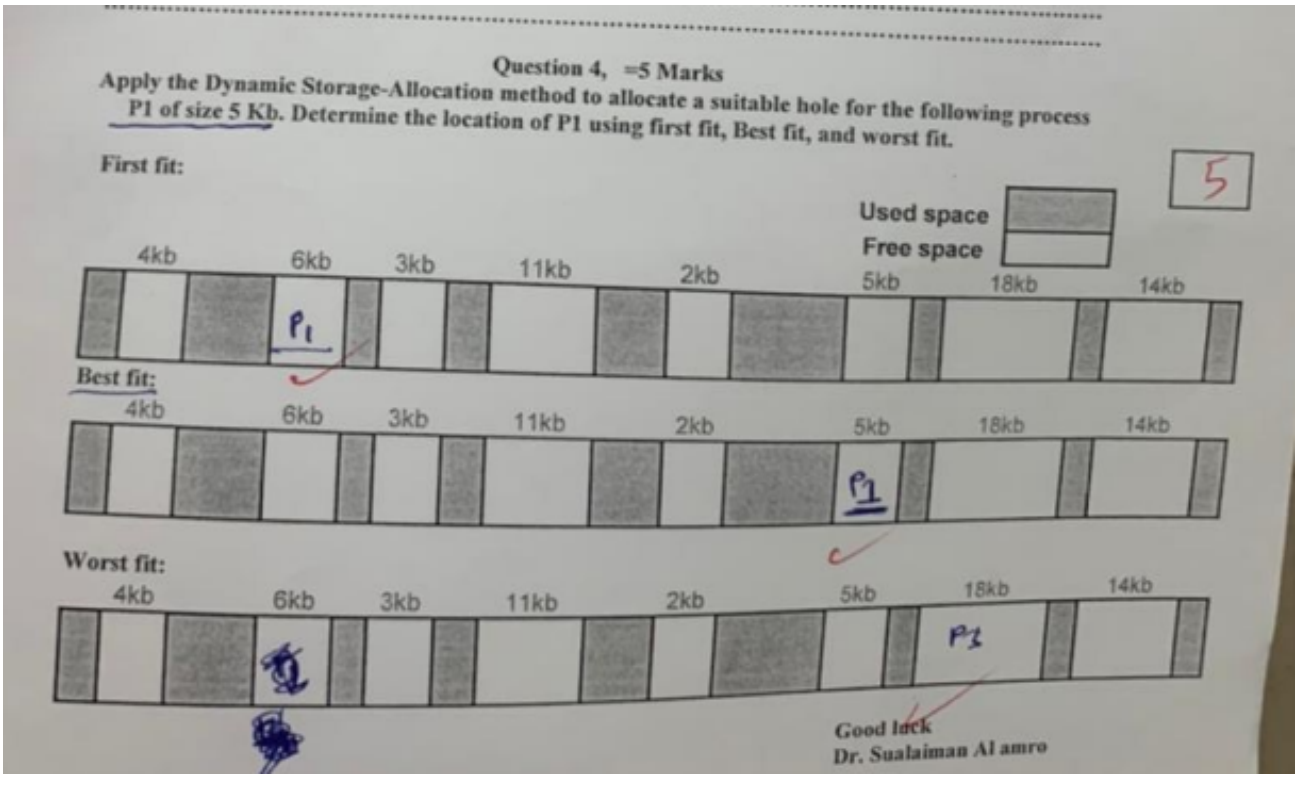
Assume that all processes arrived at time 0, use the Non Pre-emptive Shortest Job First scheduling technique, draw the Gantt chart for the processes, and calculate the average waiting time.



AVG = 2 + 5 + 11 = 18 = 4.5
4 4

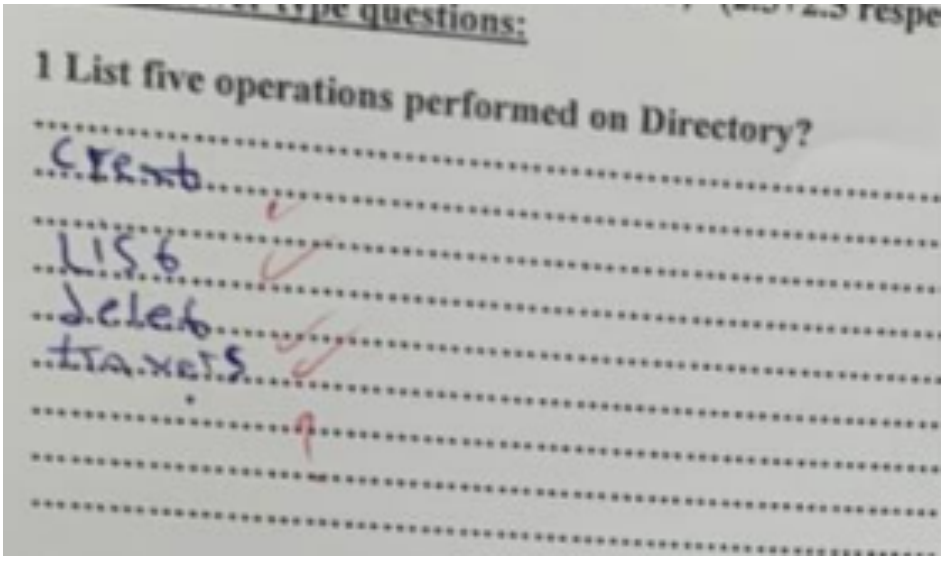
B. [6 marks]

جا به نسخ لصق

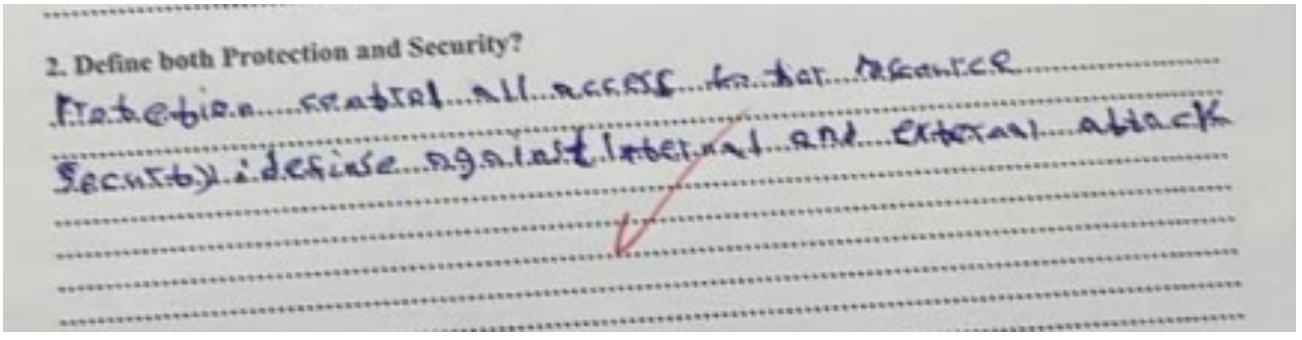


السؤال الرابع:

A.



B.



C. What is the Security Violation Categories? :

1- Breach of confidentiality

2- Breach of integrity

3- Breach of availability

4- Theft of service

5- Denial of service (DOS)

السؤال الخامس:

A. ways to improve input/output system ?

B. كان يتكلم البرفلج بس نسيت وش نص السؤال لكن كان من هذا السلايد



Principles of Protection

- Guiding principle – **principle of least privilege**
  - Programs, users and systems should be given just enough **privileges** to perform their tasks
  - Limits damage if entity has a bug, gets abused
  - Can be static (during life of system, during life of process)
  - Or dynamic (changed by process as needed) – **domain switching, privilege escalation**
  - "Need to know" a similar concept regarding access to data
- Must consider "grain" aspect
  - Rough-grained privilege management easier, simpler, but least privilege now done in large chunks
    - For example, traditional Unix processes either have abilities of the associated user, or of root
  - Fine-grained management more complex, more overhead, but more protective
    - File ACL lists, RBAC
- Domain can be user, process, procedure



C. What is the diff between TYPE 1 and TYPE 2 in vm system ?



Implementation of VMMs

- Vary greatly, with options including:
  - **Type 0 hypervisors** - Hardware-based solutions that provide support for virtual machine creation and management via firmware
    - IBM LPARs and Oracle LDOMs are examples
  - **Type 1 hypervisors** - Operating-system-like software built to provide virtualization
    - Including VMware ESX, Joyent SmartOS, and Citrix XenServer
  - **Type 1 hypervisors** – Also includes general-purpose operating systems that provide standard functions as well as VMM functions
    - Including Microsoft Windows Server with HyperV and RedHat Linux with KVM
  - **Type 2 hypervisors** - Applications that run on standard operating systems but provide VMM features to guest operating systems
    - Includeing VMware Workstation and Fusion, Parallels Desktop, and Oracle VirtualBox



D. discuss Distributed file system (DFS) :



Distributed File System

- **Distributed file system** (**DFS**) – a distributed implementation of the classical time-sharing model of a file system, where multiple users share files and storage resources
- A DFS manages set of dispersed storage devices
- Overall storage space managed by a DFS is composed of different, remotely located, smaller storage spaces
- There is usually a correspondence between constituent storage spaces and sets of files
- Challenges include:
  - Naming and Transparency
  - Remote File Access



و بس هذي كل الاسالة اللي جت بالاختبار

بالتوفيق للجميع ولاتنسونن من دعاكم

اسئلة الإختبار النهائي لنظام التشغيل (الترم 422)

1- السؤال الأول: 10 اسئلة اختيارات ومن بينها :
أ- سؤال loogical address and relocatioon والحل يكون بالجمع
ب- حل مشكلة الـ critical section
ج- ليست من خصائص ال indirect
د- سؤال حله الـ segmentation
هـ- سؤال عن ال pages
واسئلة اخرى

2- السؤال الثاني : 10 صح وخطأ ومن بينها :
نسيت

3- السؤال الثالث: 10 فراغات ومن بينها :
أ- ببيترسون حل لمشكلة الـ.....
ب- هو الحماية من الأخطار الداخلية والخارجية .....
ج-

4- السؤال الرابع: عدة اسئلة مقالية وهي كالاتي:
أ- اذكر ميزتين للـ API عن ال System calls
ب- عرف كلاً من prootection and security
ج- الفروقات ما بين signature-based و behavviour-based خمس درجات
د- اذكر 4 من scheduling criteria
هـ مشكلة ال starvation وحلها

5- مسألتين وهم:
أ- CPU Scheduling with Non preempetive
ب- first fit , best fit , worst fit holes

4:27 PM

فاينل نظام تشغيل 451

٥ صح وخطأ

٥ اختياري

CPU priority

First, best, worst holes

تعريف Protection , security

مقارنه Type1 , type2 vm

تعداد طرق Improve input/output

تعداد Security violation

شرح privilege

شرح File distributed

N = Not S = Slide No

المقالي:

N:9 S:29 • encryption & decryption
N:9 S:2 N:2 S:6 • protection and security
N:2 S:13 • benefits APIs and System calls
N:3 S:33 • signature & behavior based
N:2 S:18 • directory operations
N:9 S:15 • security violatoins categories
N:8 S:14 • DMA in I/O

صح وخطأ:

- Each OS has its own I/O subsystem structures and driver frameworks : **True**
- Binary semaphore contains an integer value that can range over an unrestricted domain : **false**
- a port canning is program that initiates a security incident under certain circumstances : **false**
- Block and stack methods limit the number or length of parameters being passed : **false**
- In Mickrokernal system an application program can directly access a file : **false**

خيارات :

- abstract hardware of a single computer into several different execution environment ? : **Virtual machine**

- Which of the following has different size ? :
    1. **Program pages**
    2. **Program segment**
    3. **Program frames**
    4. **All answers**

- Which of the following system calls is related to information maintenance ? : **get time or date**

- Unauthorized modification of data leads to : **Breach of Integrity**

- Intruder sits in data flow, masquerading as sender to receiver and vice versa : **Man in the middle**

مسألتين :

- Priority Scheduling
- first, best and worst fit

- encryption & decryption

1 : generating ciphertexts from messagesse

2 : generating messagesse from ciphertexts

- protection and security

1 : controll access of Processes of user to resources

2 : defense of system against internal and external attacks

- benefits APIs and System calls

API has more functionality

API support multipe versiones

- signature & behavior based

detaction Spots bed patterns

detaction spote bed patterns

- directory operations

Search — create — delete — renam — list

- security violatoins categories

Breach of confidentiality confidentiality

Breach of Intigrity Integrity

~ ~ availaplity avalaplity

theft of servec

Denial of servce (DoS)

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المملكة العربية السعودية
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كلية الحاسب
قسم علوم الحاسب

Qassim University

Course: CS222 "Operating Systems"
Semester 441- 2022/ 2023

Mark_____/25

Duration: 1 hour
Day 02/10/2022

Student Name: **Student ID:**

For Instructor use only

Outcomes	1	2	3	4	5	6
Course covering Level	√					

N = Not
S = slide No

Question	1	2	3	4	5
Covered Outcome	1	1	1	1	1
Allocated mark	5	5	5	5	5
Earned mark					

Total	
1	exam
25	25

Question 1, 1x5=5 Marks

Choose correct (best match) one of the four given answers:

N:2 S:44

1. **An Operating system failure can generate:**
   a. A crash dump file. b. A program counter
   c. A PCB d. A core dump file.

M:2 S:6

2. **The OS keeps track of which users use how much and what kinds of computer resources, this service is called:**
   a. Error detection b. File-system manipulation
   c. Accounting d. Resource allocation

N:3 S:32

3. **The mechanism for processes to communicate and to synchronize their actions is called:**
   a. Serialization b. Segmentation
   c. Paging d. Interprocess Communication

N:2 S:72

4. **Which of the following system calls is related to information maintenance**
   a. end, abort b. get device attributes
   c. create file, delete file d. get time or date

N:3 S:35

5. **Which of the following is not a property of indirect communication**
   a. Link established only if processes share a common mailbox.
   b. A link may be associated with many processes.
   c. Each pair of processes shares one communication link.
   d. Link may be unidirectional or bi-directional.

Question 2, 1x5=5 Marks

Mark the below Statements True or False:

N:5 S:9 1. One of the goals of scheduling techniques is to maximize turnaround time. [F]

N:5 S:8 2. CPU utilization means keeping the CPU as busy as possible. [T]

N:4 S:13 3. Peterson's Solution is a solution to the critical section problem. [T]

N:3 S:34 4. In direct communication, a link can exist between more than two processes. [F]

N:5 5. In the FCFS scheduling technique, processes can be preempted. [F]

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كلية الحاسب
قسم علوم الحاسب

Qassim University

Course: CS222 "Operating Systems"
Semester 441- 2022/ 2023

Mark_____/25

Duration: 1 hour
Day 02/10/2022

Question 3, 1x5=5 Marks

Fill in the blank with the exact Word or Phrase:

N:3 S:11 1. ...Job...queue contains a set of all processes in the system.

N:3 S:14 2. A ...short term...scheduler selects which process should be executed next and allocates CPU.

N:9 S:13 3. Peterson's Solution is a solution to the ...critical...section... problem.

N:1 S:18 4. The ...D.M.A... is used for high-speed I/O devices able to transmit information at close to memory speeds.

N:2 S:86 5. A ...bootstrap...is a small piece of code locates the kernel, loads it into memory, and starts it.

Question 4, (2.5+2.5 respectively) =5 Marks

Short answer type questions:

1. List four different possible states for a process?

N:3 S:6 ...New... ...Ready... ...Running... ...terminated... ...waiting...

2. In priority scheduling techniques low priority processes may never execute, what is this problem called and what is the solution to prevent such a problem?

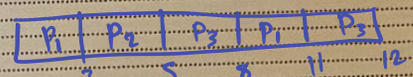
N:5 S:10 ...It call starvation and the solution is Aging... ...starvation - Aging...

Question 5, =5 Marks

Process	Duration (Burst time)
P1	6 → 3
P2	2
P3	4 → 1

Assume that all processes arrived at time 0, use the RR scheduling technique with q = 3, draw the Gantt chart for the processes, and calculate the average waiting time.

N:5 S:21



Avg ((8-3) + (3) + ((5-0)+(11-5)))/3

5 + 3 + 8/3

= 16/3 = 5.33

Good luck
Dr. Sulaiman Al amro

المقالي:

- encryption & decryption
- protection and security
- benefits APIs and System calls
- signature & behavior based
- directory operations
- security violatoins categories
- DMA in I/O

صح وخطأ:

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مسألتين :

- Priority Scheduling
- first, best and worst fit

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قسم علوم الحاسب

Course: CS222 "Operating Systems"
Semester 451- 2023

(A)

Mark 26 **/30**

Duration: 1 hour
Day 26/10/2023

Student Name: [redacted] **Student ID:** [redacted]

For Instructor use only

Outcomes	1	2	3	4	5	6
Course covering Outcomes	√				√	

Question	1	2	3	4	5
Covered Outcome	1,5	1,5	1,5	1,5	1,5
Allocated mark	6	6	6	6	6
Earned mark	6	6	2	6	6

Total		
1	5	Exam
15	15	30

6

Question 1, 1x6=6 Marks

Choose correct (best match) one of the four given answers:

1. **The queue which contains a set of all processes in the system:**
   (a.) The Job Queue. b. The Ready Queue
   c. The Waiting Queue d. The Device Queue.

2. **The scheduler that selects which process should be executed next and allocates CPU is called:**
   a. Long-term scheduler b. Medium-term scheduler
   (c.) Short-term scheduler d. High-term scheduler

3. **If the CPU generated a logical address = 501 and the value of the relocation register = 1320, the physical address will be:**
   a. 2740 (b.) 1821
   c. 902 d. 819

4. **It is a process that cannot affect or be affected by other processes executing in the system:**
   a. A Cooperating process (b.) An Independent process
   c. A Passive process d. A Terminated process

5. **An abstract hardware of a single computer into several different execution environments:**
   (a.) Virtual machine. b. Live migration
   c. Cloud computing d. Network Address Translation (NAT).

6. **Which of the following is not an advantage of multiprocessors systems:**
   a. Increasing throughput (b.) Reducing reliability
   c. Economy of scale d. Fault tolerance

6

Question 2, 1x6=6 Marks

Mark the below Statements True or False:

1. Binary semaphore contains an integer value that can range over an unrestricted domain. [F]
2. When the time quantum increases, the number of context switches increases. [F]
3. The MMU maps the virtual address generated by the CPU to its physical address. [T]
4. Protection is used to defense of the system against internal and external attacks. [F]

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قسم علوم الحاسب

Course: CS222 "Operating Systems" **(A)** **Duration: 1 hour**
Semester 451- 2023 **Mark_____/30** **Day 26/10/2023**

5. SJF scheduling gives maximum average waiting time for a given set of processes. [F]
6. CPU utilization means keeping the CPU as busy as possible. [T]

Question 3, 1x6=6 Marks 2

Fill in the blank with the exact Word or Phrase:

1. Entity containing file system is known as a ..library..
2. ..security.. defense of the system against internal and external attacks.
3. Peterson's Solution is a solution to the ..critical section.. problem.
4. A file system must be ..checked.. before it can be accessed.
5. ..Passive.. process can affect or be affected by the execution of another process.
6. A program must be brought from..Hdrs..into memory and placed within a process for it to be run.

Question 4, (3 + 3 respectively) =6 Marks 6

Short answer type questions:

1. List four different possible states for a process?

1- New
2- Waiting
3- Ready
4- Running
5- Terminatij

2. In priority scheduling techniques low priority processes may never execute, what is this problem called and what is the solution to prevent such a problem?

It called Starvation
And the solution is Aging

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Course: CS222 "Operating Systems"
Semester 451- 2023

(A)

Mark_____/30

Duration: 1 hour
Day 26/10/2023

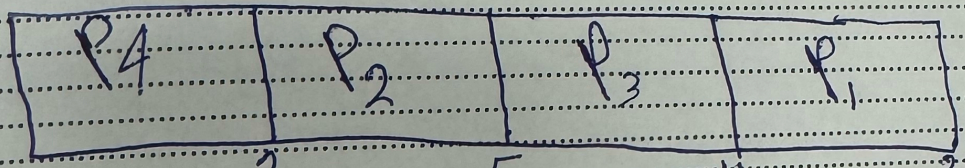
Question 5, =6 Marks

6

Consider the following table:

Process	Duration (Burst time)
P1	21 4
P2	3 2
P3	6 3
P4	2 1

Assume that all processes arrived at time 0, use the Non Pre-emptive Shortest Job First scheduling technique, draw the Gantt chart for the processes, and calculate the average waiting time.



$$AVG = \frac{2 + 5 + 11}{4} = \frac{18}{4} = 4.5$$

Good luck
Dr. Sualaiman Al amro

Course covering Outcomes	V				

Question	1	2	3	4	5
Covered Outcome	1,5	1,5	1,5	1,5	1,5
Allocated mark	6	6	6	6	6
Earned mark					

Total		
1	5	Exam
15	15	30

6

Question 1, 1x6=6 Marks

Choose correct (best match) one of the four given answers:

1. **An Operating system failure can generate:**
   a. A crash dump file. b. A program counter
   c. A PCB d. A core dump file.

2. **The OS keeps track of which users use how much and what kinds of computer resources, this service is called:**
   a. Error detection b. File-system manipulation
   c. Accounting d. Resource allocation

3. **Which of the following system calls is related to information maintenance**
   a. end, abort b. get device attributes
   c. create file, delete file d. get time or date

4. **The mechanism for processes to communicate and to synchronize their actions is called:**
   a. Serialization b. Segmentation
   c. Paging d. Interprocess Communication

5. **Which of the following is not a property of indirect communication**
   a. Link established only if processes share a common mailbox.
   b. A link may be associated with many processes.
   c. Each pair of processes shares one communication link.
   d. Link may be unidirectional or bi-directional.

6. **Which of the following is not an advantage of multiprocessors systems:**
   a. Increasing throughput b. Reducing reliability
   c. Economy of scale d. Fault tolerance

5

Question 2, 1x6=6 Marks

Mark the below Statements True or False:

1. One of the goals of scheduling techniques is to maximize turnaround time. [✗]
2. CPU utilization means keeping the CPU as busy as possible. [✓]
3. Peterson's Solution is a solution to the critical section problem. [✓]
4. In direct communication, a link can exist between more that two processes. [✗]
5. In the FCFS scheduling technique, processes can be preempted. [✗]
6. A Program is a passive entity and a process is an active entity. [✗]

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Qassim University — جامعة القصيم

Course: CS222 "Operating Systems"
Semester 441- 2022/ 2023

Mark_____/30

Duration: 1 hour
Day 10/05/2023

5

Question 3, 1x6=6 Marks

Fill in the blank with the exact Word or Phrase:

1. ...J.O.P.....
2. .....queue contains a set of all processes in the system.
3. .....defense of the system against internal and external attacks.
4. Peterson's Solution is a solution to the .....problem.
5. .....scheduling technique gives minimum average waiting time for a given set of processes.
6. .....process can affect or be affected by the execution of another process.

.....is finding and fixing errors, or bugs.

6

Question 4, (3+3 respectively) =6 Marks

Short answer type questions:

1. **List four different possible states for a process?**

.....New.....
.....Ready.....
.....Run.....
.....Wait.....

2. **In priority scheduling techniques low priority processes may never execute, what is this problem called and what is the solution to prevent such a problem?**

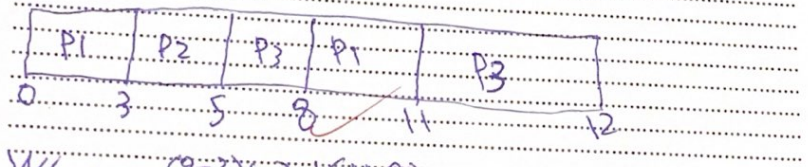
.....Starvation.....We can solve this problem by aging.....

5

Question 5, =6 Marks

Process	Duration (Burst time)
P1	6
P2	2
P3	4

Assume that all processes arrived at time 0, use the RR scheduling technique with q = 3, draw the Gantt chart for the processes, and calculate the average waiting time.



Wavg = (8-3)+3+(11-8) / 3 = 11/3 = 3.66

Good luck
Dr. Sualaiman Al amro

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Course: CS222 "Operating Systems"
Semester 451- 2023

(A)

Mark 26 **/30**

Duration: 1 hour
Day 26/10/2023

Student Name: [redacted] **Student ID:** [redacted]

For Instructor use only

Outcomes	1	2	3	4	5	6
Course covering Outcomes	√				√	

Question	1	2	3	4	5
Covered Outcome	1,5	1,5	1,5	1,5	1,5
Allocated mark	6	6	6	6	6
Earned mark	6	6	2	6	6

Total		
1	5	Exam
15	15	30

6

Question 1, 1x6=6 Marks

Choose correct (best match) one of the four given answers:

1. **The queue which contains a set of all processes in the system:**
   (a.) The Job Queue. b. The Ready Queue
   c. The Waiting Queue d. The Device Queue.

2. **The scheduler that selects which process should be executed next and allocates CPU is called:**
   a. Long-term scheduler b. Medium-term scheduler
   (c.) Short-term scheduler d. High-term scheduler

3. **If the CPU generated a logical address = 501 and the value of the relocation register = 1320, the physical address will be:**
   a. 2740 (b.) 1821
   c. 902 d. 819

4. **It is a process that cannot affect or be affected by other processes executing in the system:**
   a. A Cooperating process (b.) An Independent process
   c. A Passive process d. A Terminated process

5. **An abstract hardware of a single computer into several different execution environments:**
   (a.) Virtual machine. b. Live migration
   c. Cloud computing d. Network Address Translation (NAT).

6. **Which of the following is not an advantage of multiprocessors systems:**
   a. Increasing throughput (b.) Reducing reliability
   c. Economy of scale d. Fault tolerance

6

Question 2, 1x6=6 Marks

Mark the below Statements True or False:

1. Binary semaphore contains an integer value that can range over an unrestricted domain. [F]
2. When the time quantum increases, the number of context switches increases. [F]
3. The MMU maps the virtual address generated by the CPU to its physical address. [T]
4. Protection is used to defense of the system against internal and external attacks. [F]

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Qassim University

المملكة العربية السعودية
وزارة التعليم
كلية الحاسب
قسم علوم الحاسب

Course: CS222 "Operating Systems" (A)
Semester 432- 2021/ 2022

Mark 16 /20

Duration: 1 hour
Day 08/03/2022

741

Student Name: [redacted] **Student ID** [redacted]

For Instructor use only

Outcomes	1	2	3	4	5	6
Course covering Outcomes	√				√	

Question	1	2	3	4
Covered Outcome	1	1	1	5
Allocated mark	5	5	5	5
Earned mark				

Total		
1	5	exam
15	5	25

3

Question 1, 1x5=5 Marks

Choose correct (best match) one of the four given answers:

1. **The queue which contains a set of all processes in the system:**
   a. The Job Queue
   c. The Waiting Queue
   b. The Ready Queue
   d. The Device Queue.

2. **The scheduler that selects which process should be executed next and allocates CPU is called:**
   a. Long-term scheduler
   c. Short-term scheduler
   b. Medium-term scheduler
   d. High-term scheduler

3. **If the CPU generated a logical address = 501 and the value of the relocation register = 1320, the physical address will be:**
   a. 2740
   b. 1821
   c. 902
   d. 819

4. **The mechanism for processes to communicate and to synchronize their actions is called:**
   a. Serialization
   b. Segmentation
   c. Paging
   d. Interprocess Communication

5. **Compaction means:**
   a. Deleting free spaces.
   b. Shuffle memory contents to place all free memory together
   c. Distributing the free spaces among processes.
   d. calculating physical address

4

Question 2, 1x5=5 Marks

Mark the below Statements True or False:

1. One of the goals of scheduling techniques is to maximize turnaround time. [T]
2. When the time quantum increases, the number of context switches increases. [F]
3. In direct communication, a link can exist between more than two processes. [F]
   one
4. Protection is used to defense of the system against internal and external attacks. [F]
   s
5. SJF scheduling gives maximum average waiting time for a given set of processes. [F]
   minimum

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Question 3, (2.5+2.5 respectively) =5 Marks

4

Short answer type questions:

1. List four different possible states for a process?

1- waiting 2- terminated
2- Ready
3- Running
4- New ✓

2. In priority scheduling techniques low priority processes may never execute, what is this problem called and what is the solution to prevent such a problem?

~~an~~ called (Chmoty) ~~be~~ to solve this problem make the lowest number of Priority process first till end then another and so on

or
Short duration Process

Question 4, =5 Marks

5

Consider the following table:

Process	Duration (Burst time)
P1	21 4
P2	3 2
P3	6 3
P4	2 1

Assume that all processes arrived at time 0, use the Non Pre-emptive Shortest Job First scheduling technique, draw the Gantt chart for the processes, and calculate the average waiting time.

P4 | P2 | P3 | P1
0 2 5 11 32

My waiting time: (0+2+5+11)/4
= 18/4 = 9/2 = 4.5 ✓

Good luck
Dr. Sualaiman Al amro

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Course: CS222 "Operating Systems" **(B)**
Semester 432- 2021/ 2022

Mark 18 **/20**

Duration: 1 hour
Day 09/03/2022

Student Name [redacted] **Student ID** [redacted]

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Outcomes	1	2	3	4	5	6
Course covering Outcomes	√				√	

Question	1	2	3	4
Covered Outcome	1	1	1	5
Allocated mark	5	5	5	5
Earned mark				

Total		
1	5	exam
15	5	25

Question 1, 1x5=5 Marks 4

Choose correct (best match) one of the four given answers:

1. **An Operating system failure can generate:**
a. A crash dump file. b. A program counter
c. A PCB d. A core dump file.

2. **The OS keeps track of which users use how much and what kinds of computer resources, this service is called:**
a. Error detection b. File-system manipulation
c. Accounting d. Resource allocation

3. **If the CPU generated a logical address = 401 and the value of the relocation register = 1320, the physical address will be:**
a. 2640 b. 1721
c. 802 d. 919

4. **It is a process that cannot affect or be affected by other processes executing in the system:**
a. A Cooperating process b. An Independent process
c. A Passive process d. A Terminated process

5. **An abstract hardware of a single computer into several different execution environments:**
a. Virtual machine. b. Live migration
c. Cloud computing d. Network Address Translation (NAT).

Question 2, 1x5=5 Marks 5

Mark the below Statements True or False:

1. CPU utilization means keeping the CPU as busy as possible. [T]
2. Binary semaphore contains an integer value that can range over an unrestricted domain. [F]
3. Peterson's Solution is a solution to the critical section problem. [T]
4. The MMU maps the virtual address generated by the CPU to its physical address. [T]
5. In the FCFS scheduling technique, processes can be preempted. [F]

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Mark_____/20

Duration: 1 hour
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Question 3, (2.5+2.5 respectively) =5 Marks

5

Short answer type questions:

1. List two benefits of using APIs over using system calls directly?

API has more functionality

A.P.I can ~~attack~~ deceit the OS Virtual and Time it

2. Define both Protection and Security?

Protection control all access to the resource

Security defense against internal and external attack

Question 4, =5 Marks

4

Process	Duration (Burst time)
P1	6
P2	2
P3	4

AT
0
0
0

Assume that all processes arrived at time 0, use the RR scheduling technique with q = 3, draw the Gantt chart for the processes, and calculate the average waiting time.

A.P = P1 P2 = 3 P3 = 3

P1 | P2 | P3 | P1 | P3
0 3 5 8 11 12

Avg = (5+3+3)/3 = 3.5

~~P1 = 5 P2 = 3 P3 = 3~~

~~Avg = 5+3+3/3 = 3~~

~~Avg = 5+3+3 = 11/3 = 3.5~~

Good luck
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5. SJF scheduling gives maximum average waiting time for a given set of processes. [F]
6. CPU utilization means keeping the CPU as busy as possible. [T]

Question 3, 1x6=6 Marks 2

Fill in the blank with the exact Word or Phrase:

1. Entity containing file system is known as a ..library..
2. ..security.. defense of the system against internal and external attacks.
3. Peterson's Solution is a solution to the ..critical section.. problem.
4. A file system must be ..checked.. before it can be accessed.
5. ..Passive.. process can affect or be affected by the execution of another process.
6. A program must be brought from..Hdrs..into memory and placed within a process for it to be run.

Question 4, (3 + 3 respectively) =6 Marks 6

Short answer type questions:

1. List four different possible states for a process?

1- New
2- Waiting
3- Ready
4- Running
5- Terminatij

2. In priority scheduling techniques low priority processes may never execute, what is this problem called and what is the solution to prevent such a problem?

It called Starvation
And the solution is Aging

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Semester 451- 2023

(A)

Mark_____/30

Duration: 1 hour
Day 26/10/2023

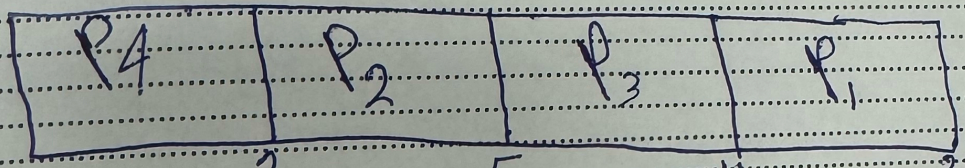
Question 5, =6 Marks

6

Consider the following table:

Process	Duration (Burst time)
P1	21 4
P2	3 2
P3	6 3
P4	2 1

Assume that all processes arrived at time 0, use the Non Pre-emptive Shortest Job First scheduling technique, draw the Gantt chart for the processes, and calculate the average waiting time.



$$AVG = \frac{2 + 5 + 11}{4} = \frac{18}{4} = 4.5$$

Good luck
Dr. Sualaiman Al amro