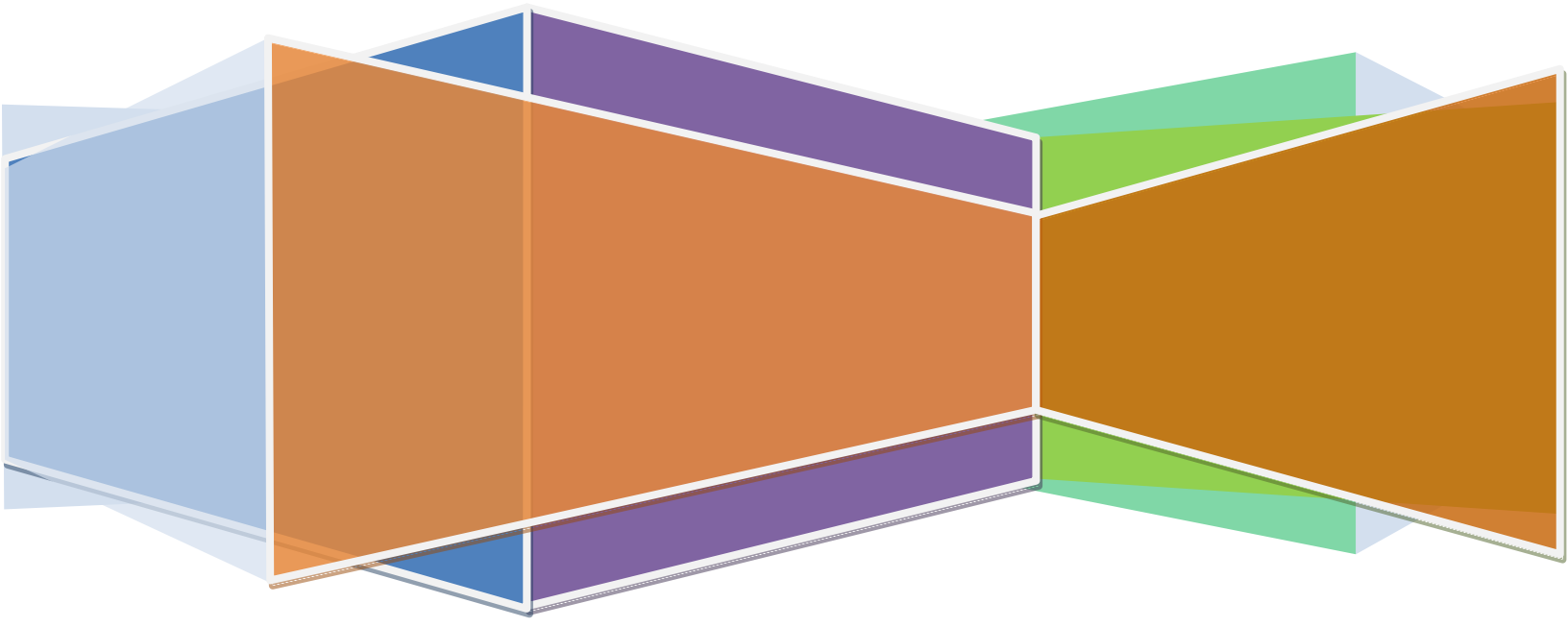
SVGM Govt. Degree College
KALYANDURG
2018-19

Certificate Course
Operating Systems

Department of Computer Science



Minutes of the Department meeting for the conduct of Certificate Course for the AY 2018-19

The Department of Computer Science, lead the way in catering to the needs of the students, has decided to be the pathfinder for the Computer Science students of our college. In job market, especially IT/ITES is economic development, Capital formation, Services to business, Reduces use of currency, Benefits to Rural BPL families and employment opportunities also providing in IT/ITES sector. So, the "Operating System" course is very essential for the Computer Science / B.Sc students. Department of Computer Science was taken these initiatives. The Department of Computer Science conducted a meeting on 13-12-2018. The faculty members of Computer Science K T Vijay Naik, B.K. Ganesh Rao and K P Nagendra Gowd, JKC FTM were attended and designed certificate programme structure for 50 days / 60 Hours. All the faculty members are accepted to run the certificate programme on Operating Systems.

Board of studies Department of Computer Science:

Sri K T Vijaya Naik : Chairman, In-charge of the Dept.

B.K. Ganesh Rao : Faculty in Computer Science

Sri K P Nagendra Gowd : Member, JKC FTM

Request Letter

From:
K T Vijay Naik,
Lecturer in Computer Science
SVGM Govt. Degree College
KALYANDURG.

Date: 15-12-2018

To
The Principal,
SVGM Govt. Degree College,
KALYANDURG.

Subject: Request for Permission to Introduce Certificate Course in Operating Systems – for 2nd Year Students – Regarding.

Respected Sir,

I hope this letter finds you in good health and high spirits. I am writing to express my earnest request for permission to introduce a certificate course on Operating Systems for Oue second year students.

With the rapid advancements in technology, proficiency in Operating Systems has become imperative for students pursuing careers in IT, ITES and related fields. This certificate course aims to provide students with key knowledge of operating system fundamentals, enhancing their skills and employability.

Course Overview:

The proposed course will cover essential topics, including an introduction to operating systems, file systems, process management, security fundamentals, and emerging trends such as virtualization and cloud computing. The curriculum is designed to align with industry requirements, ensuring that students are well-equipped for the dynamic IT landscape.

Duration:

The certificate course is envisioned to span 10 Weeks, allowing students to delve into each aspect comprehensively without disrupting their ongoing academic commitments.

Resource Requirements:

To facilitate effective learning, we anticipate utilizing existing computer labs, and if necessary, seeking support for additional software or tools required for practical sessions. We assure you that the course implementation will be seamlessly integrated into the college's academic framework.

Benefits to Students:

This certificate course not only augments their academic knowledge but also equips students with practical skills essential for future career prospects. It aligns with our college's commitment to fostering holistic education and producing well-rounded graduates.

I kindly request your approval and support for the implementation of this certificate course. Your encouragement will undoubtedly contribute to the academic excellence and professional growth of our students.

Thank you for considering this proposal. I am available at your convenience to discuss this further or address any queries you may have.

Looking forward to your positive response.

Yours Faithfully,

[K.T. Vijay Naik]
Lecturer in Computer Science
Department of Computer Science
SVGM Govt. Degree College
KALYANDURG

Principal's Permission Letter:

From,
Principal,
SVGM Govt. Degree College,
KALYANDURG.

17-12-2018

To,
Sri. K T Vijay Naik,
Lecturer in Computer Science,
SVGM Govt. Degree College,
KALYANDURG

Dear K T Vijay Naik,

Subject: Permission to Initiate Certificate Course in Operating Systems

I trust this letter finds you well. I am writing to officially grant permission for the initiation of a Certificate Course in Operating Systems, to be conducted by you, Sri K T Vijay Naik, Lecturer in Computer Science, at SVGM Govt. Degree College, Kalyandurg.

This course is deemed valuable to our students' academic and professional development, aligning with the ever-evolving landscape of computer science. Your expertise and commitment to delivering quality education make you the ideal instructor for this endeavor.

The syllabus, as previously discussed, covers comprehensive topics ranging from the fundamentals of operating systems to advanced concepts like virtualization and mobile operating systems. I am confident that your course structure, which incorporates theory, practical exercises, and interactive sessions, will foster a rich learning experience for our students.

I hereby entrust you with the responsibility of ensuring that the course adheres to the stipulated schedule and maintains the high standards of education synonymous with SVGM Govt. Degree College, KALYANDURG.

Additionally, I encourage you to facilitate an environment that promotes student engagement, critical thinking, and collaborative learning. We believe that this Certificate

Course will not only enhance the academic curriculum but also contribute significantly to our students' skill development and future career prospects.

I appreciate your commitment to academic excellence and your willingness to take on this responsibility. I am confident that under your guidance, the Certificate Course in Operating Systems will be a resounding success.

Should you require any further support or resources, please do not hesitate to reach out to the administrative team.

Note : Start the Course in last week of the December 2018
and Conclude before 15th of the February 2019.

PRINCIPAL

Circular

19-12-2018

Subject: Certificate Course in Operating Systems for B.Sc. Students

Dear Students,

The Department of Computer Science is pleased to announce the commencement of a 50-day Certificate Course in Operating Systems specifically designed for B.Sc. students. This course aims to equip you with a comprehensive understanding of the fundamental concepts and principles of operating systems.

Course Details:

- Start Date: 20th December 2018
- Duration: 50 days (Mondays & Wednesdays, 4:00 PM - 6:00 PM)
- Target Audience: B.Sc. Students (All streams)
- Faculty: Renowned Faculty Members from the Department of Computer Science
- Venue: Computer Lab, Department of Computer Science

Benefits of the Course:

- Gain in-depth knowledge of operating systems concepts.
- Enhance your employability skills in IT companies.
- Prepare for competitive examinations like NET/JRF, GATE, etc.
- Strengthen your foundation for advanced computer science courses.
- Obtain a valuable certificate upon successful completion.

Registration:

Interested students can register for the course by filling out the registration form available at the Department of Computer Science by 21/12/2018. Seats are limited, so register early to avoid disappointment.

We look forward to welcoming you to the course!

Head,
Department of Computer Science

List of Students :

	2018-19		
S.No.	Htno	Name	Signature
MPC			
1	180111051	Bayrella Ramu	
2	180111052	Borappa gari Somasekhar	
3	180111054	Dabali Gurumurthy	
4	180111055	Nayasa Venkatesulu	
5	180111056	Pitti Gowardhana	
MPCS			
6	180111081	Bellapukonda Sreedhar	
7	180111084	Gundalaiah gari Pavan Kumar	
8	180111085	Kotturu Pavan Kumar	
9	180111086	Mangala Anjali Sai	
MPC			
10	190111051	Dasari Pavan	
11	190111052	Gandra Goddali Chandra Sekhar	
12	190111053	Kuruba Sunil Kumar	

Syllabus :

Week 1-2: Introduction to Operating Systems
Days 1-2: Overview of Operating Systems - Definition and purpose of operating systems - Evolution of operating systems - Types of operating systems (batch, time-sharing, distributed, etc.).
Days 3-5: Operating System Structures - Kernel and user modes -Monolithic, microkernel, and hybrid architectures - System calls and APIs
Days 6-8: Process Management - Processes and threads - Process states and life cycle – Inter process communication (IPC) basics.
Days 9-10: Memory Management - Memory hierarchy - Virtual memory and paging - Memory segmentation.

Week 3-4: File Systems
Days 11-13: File System Concepts - File and directory structures - File operations (open, close, read, write) - File attributes and permissions.
Days 14-16: File System Implementation - File system organization - File allocation methods (contiguous, linked, indexed) - File system integrity and recovery.
Days 17-19: Disk Management - Disk structure and organization - Disk scheduling algorithms - Disk cache and buffering.
Days 20-22: Input/Output (I/O) Systems - I/O devices and device controllers - I/O operations and interrupts - I/O system design and performance.

Week 5-6: Process Synchronization and Deadlocks
Days 23-25: Process Synchronization - Critical sections and mutual exclusion - Semaphores and mutexes-Deadlocks and prevention techniques.
Days 26-28: Threads and Concurrency - Thread synchronization - Concurrent programming - Parallelism vs. concurrency.
Days 29-30: Deadlock Handling - Detection and recovery - Deadlock avoidance and prevention-Resource allocation graphs.

Week 7-8: System Security and Protection
Days 31-33: Security Fundamentals - Authentication and authorization - Security threats and vulnerabilities - Encryption and decryption.
Days 34-36: Access Control - Role-based access control - Mandatory and discretionary access control - Security policies.
Days 37-38: Protection Mechanisms - Memory protection - File protection - Hardware-based protection.
Days 39-40: Mid-Term Project and Review - Mid-term assignment related to OS fundamentals - Review session to address questions and clarify concepts.

Week 9-10: Advanced Topics and Emerging Trends
Days 41-43: Virtualization - Types of virtualization - Virtual machines and hypervisors - Benefits and challenges of virtualization.
Days 44-45: Cloud Computing and OS -Cloud computing concepts-Role of operating systems in the cloud - Containerization with Docker.
Days 46-48: Mobile Operating Systems - Introduction to mobile OS (iOS, Android) - Mobile OS architecture and features - Application development for mobile platforms.
Days 49-50: Final Project and Certification Assessment - Final project on an advanced OS topic.
Certification assessment based on project outcomes and overall understanding.
Note: Each day's schedule includes a mix of theory, practical exercises, and Q&A sessions.
The mid-term and final projects are designed to apply theoretical concepts to real-world scenarios.
Students are encouraged to explore additional resources and participate in discussions to enhance their understanding of operating system fundamentals.

Question Paper:

Department of Computer Science
SVGM Govt. Degree College : KALYANDURG

Operating Systems Certificate Course

Total Marks: 60 Time hrs 2:00 mins

Section A: Multiple Choice Questions (20 marks)

1. What is the primary purpose of an operating system?
    A) To execute applications
    B) To manage hardware resources
    C) To facilitate communication between users
    D) To connect to the internet
2. Which of the following is NOT a type of operating system?
    A) Batch
    B) Real-time
    C) Recursive
    D) Time-sharing
3. In a microkernel architecture, where is the majority of the operating system functionality implemented?
    A) In the kernel
    B) In user space
    C) In the hardware
    D) In the file system
4. What is the purpose of system calls in an operating system?
    A) To execute user programs
    B) To manage memory allocation
    C) To provide an interface to the operating system services
    D) To handle hardware interrupts
5. What is a thread in the context of operating systems?
    A) A process state
    B) A lightweight process sharing the same resources with other threads
    C) A unit of memory allocation
    D) A hardware component
6. What is Inter Process Communication (IPC) used for?
    A) To synchronize processes
    B) To manage file systems
    C) To handle interrupts
    D) To allocate memory
7. What is the purpose of virtual memory?
    A) To increase the speed of memory access
    B) To provide additional physical memory
    C) To manage memory hierarchy
    D) To separate kernel and user modes
8. What is the primary function of file operations such as open, close, read, and write?
    A) To manage file permissions
    B) To create new files
    C) To manipulate file attributes
    D) To perform basic file operations

9. Which file allocation method uses a linked list of disk blocks to store a file?
    A) Contiguous allocation
    B) Linked allocation
    C) Indexed allocation
    D) Multilevel allocation
10. Which component is responsible for scheduling disk access requests in an operating system?
    A) Disk controller
    B) Kernel
    C) Device driver
    D) Scheduler
11. What is the function of disk cache in disk management?
    A) To store frequently accessed disk blocks in memory
    B) To allocate free space on the disk
    C) To manage disk partitions
    D) To encrypt data on the disk
12. Which part of the operating system is responsible for managing communication between I/O devices and the CPU?
    A) Device driver
    B) File system
    C) Scheduler
    D) Memory manager
13. What is the purpose of interrupts in I/O systems?
    A) To terminate processes
    B) To notify the CPU that an I/O operation has completed
    C) To manage file systems
    D) To allocate memory
14. Which synchronization mechanism is used to control access to shared resources in a multithreaded environment?
    A) Semaphores
    B) Mutexes
    C) Deadlocks
    D) Critical sections
15. Which of the following is an example of a time-sharing operating system?
    A. MS-DOS
    B. Windows 10
    C. Linux
    D. Android
16. In the context of operating systems, what does IPC stand for?
    A. Internet Protocol Control
    B. Interprocess Communication
    C. Input Process Control
    D. Internal Process Coordination
17. What is the purpose of a file system?
    A. Manage memory
    B. Manage processes
    C. Organize and store data on storage devices
    D. Control network connections
18. Which disk scheduling algorithm selects the request that is closest to the current disk arm position?

A. First-Come-First-Serve (FCFS)
B. Shortest Seek Time First (SSTF)
C. Round Robin
D. Priority Scheduling

19. In file systems, what is a benefit of using a journaling file system?
    A. Faster file access
    B. Improved file compression
    C. Quick recovery after a system crash
    D. Better directory organization
20. What is mandatory access control in system security?
    A. Users have full control over their resources.
    B. Access is granted based on user discretion.
    C. Access is controlled by system policies.
    D. Access control is not enforced.

Section B: Fill in the Blanks (20 marks)

1. An operating system is a software that acts as an _____ between the computer hardware and the user applications.
2. The purpose of an operating system is to provide _____ and manage computer resources efficiently.
3. _____ is an example of a system call.
4. Different types of operating systems include batch, time-sharing, and _____ systems.
5. The operating system operates in different _____, including kernel and user modes.
6. Monolithic, microkernel, and hybrid are types of operating system _____.
7. System calls provide an interface for applications to request services from the operating system _____.
8. File operations such as open, close, read, and write are essential for _____ manipulation.
9. File attributes include properties like _____ and modification time.
10. Permissions in file systems determine who can _____ a file and in what way.
11. File allocation methods include _____ allocation, linked allocation, and indexed allocation.
12. File system integrity ensures that data remains consistent and _____ during failures.
13. Disk scheduling algorithms manage the order in which _____ are accessed on a disk.
14. I/O operations involve tasks like _____ data between memory and devices.
15. Critical sections are parts of code that must be executed _____ by only one process at a time.
16. Semaphores and mutexes are synchronization mechanisms to prevent _____ access to shared resources.
17. Deadlock detection involves identifying _____ in the resource allocation graph.
18. Authentication ensures the _____ of users attempting to access a system.
19. Security threats and vulnerabilities require robust _____ measures to protect computer systems.
20. The mid-term project provides an opportunity to apply _____ concepts learned in the course.

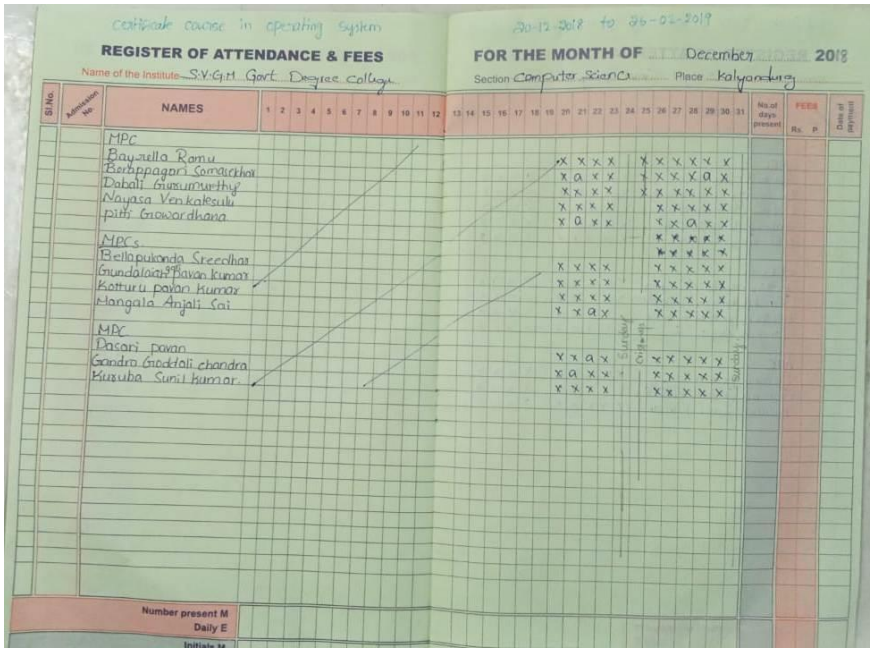
Section C : Short Answer Questions (Answer any 5 Questions) **(5 x 4 = 20)**

1. What is the purpose of an operating system?
2. What is the role of system calls and APIs in an operating system?
3. How does a file system ensure integrity and recover from failures?
4. Define I/O devices and their controllers.
5. Differentiate between authentication and authorization.
6. What are the core concepts of cloud computing?
7. Introduce the two major mobile operating systems.
8. What skills are needed for application development on mobile platforms?

Viva Voce and Practicals 40 Marks

Total 100 Marks

Students Attendance :



certificate course in operating system 20-12-2018 to 26-02-2019

REGISTER OF ATTENDANCE & FEES

FOR THE MONTH OF December 2018

Name of the Institute S.V.G.M Govt. Degree collage

Section Computer Scienc Place Kalyandurg

Sl.No.	Admission No.	NAMES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	No. of days present	FEES Rs. P	Date of payment
		MPC																																		
		Bayrella Ramu													x	x	x	x		x	x	x	x	x	x											
		Barbapagari Somasekhar													x	a	x	x		x	x	x	x	a	x											
		Dabali Gurumurthy													x	x	x	x		x	x	x	x	x	x											
		Nayasa Venkateswlu													x	x	x	x		x	x	x	x	x	x											
		pitti Goswardhana													x	a	x	x		x	a	x	x													
		MPCs																		x	x	x	x													
		Bellapukonda Sreedhar													x	x	x	x		x	x	x	x													
		Gundalaiah Pavan kumar													x	x	x	x		x	x	x	x													
		Kotturu pavan kumar													x	x	x	x		x	x	x	x													
		Mangala Anjali Sai													x	x	a	x		x	x	x	x													
		MPC																																		
		Dasari pavan													x	a	x			x	x	x	x													
		Gandra Goddati chandra													x	a	x	x		x	x	x	x													
		Kuruba Sunil kumar													x	x	x			x	x	x	x													

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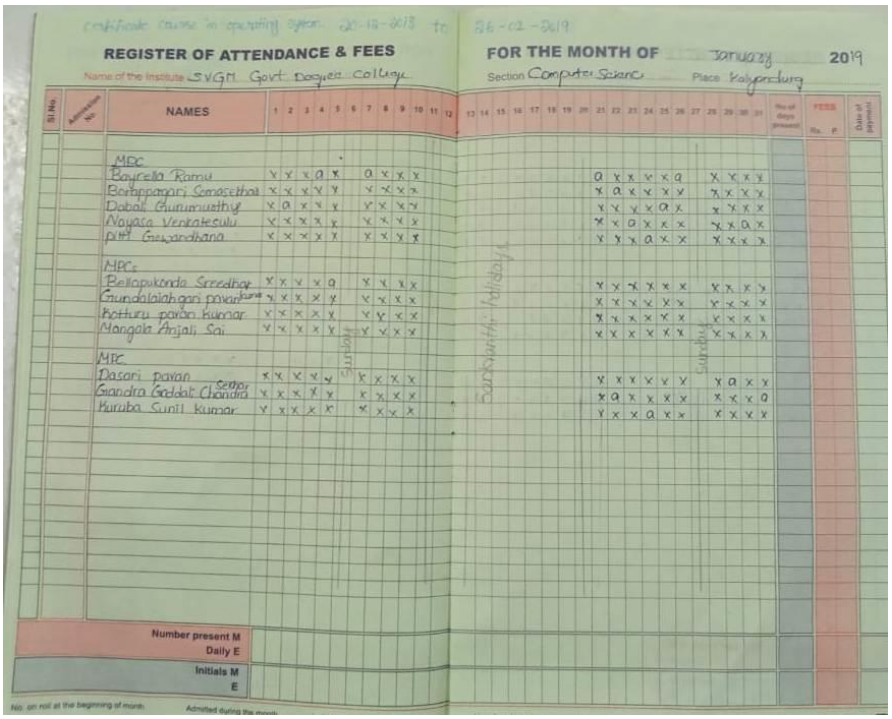

certificate course in operating system 20-12-2018 to 26-02-2019

REGISTER OF ATTENDANCE & FEES

FOR THE MONTH OF January 2019

Name of the Institute SVGM Govt. Degree collage

Section Computer Scienc Place Kalyandurg

Sl.No.	Admission No.	NAMES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	No. of days present	FEES Rs. P	Date of payment
		MPC																																		
		Bayrella Ramu	x	x	x	a	x		a	x	x	x			a	x	x	x	x	a		x	x	x	x											
		Barbapagari Somasekhar	x	x	x	x	x		x	x	x	x			x	a	x	x	x	x		x	x	x	x											
		Dabali Gurumurthy	x	a	x	x	x		x	x	x	x			x	x	x	x	a	x		x	x	x	x											
		Nayasa Venkateswlu	x	x	x	x	x		x	x	x	x			x	x	a	x	x	x		x	a	x	x											
		pitti Goswardhana	x	x	x	x	x		x	x	x	x			x	x	a	x	x	x		x	x	x	x											
		MPCs																																		
		Bellapukonda Sreedhar	x	x	x	x	a		x	x	x	x			x	x	x	x	x	x		x	x	x	x											
		Gundalaiah pavankumar	x	x	x	x	x		x	x	x	x			x	x	x	x	x	x		x	x	x	x											
		Kotturu pavan kumar	x	x	x	x	x		x	x	x	x			x	x	x	x	x	x		x	x	x	x											
		Mangala Anjali Sai	x	x	x	x	x		x	x	x	x			x	x	x	x	x	x		x	x	x	x											
		MPC																																		
		Dasari pavan	x	x	x	x	x		x	x	x	x			x	x	x	x	x	x		x	a	x	x											
		Gandra Goddati Chandra	x	x	x	x	x		x	x	x	x			x	a	x	x	x	x		x	x	x	a											
		Kuruba Sunil kumar	x	x	x	x	x		x	x	x	x			x	x	x	a	x	x		x	x	x	x											

Number present M

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Initials M

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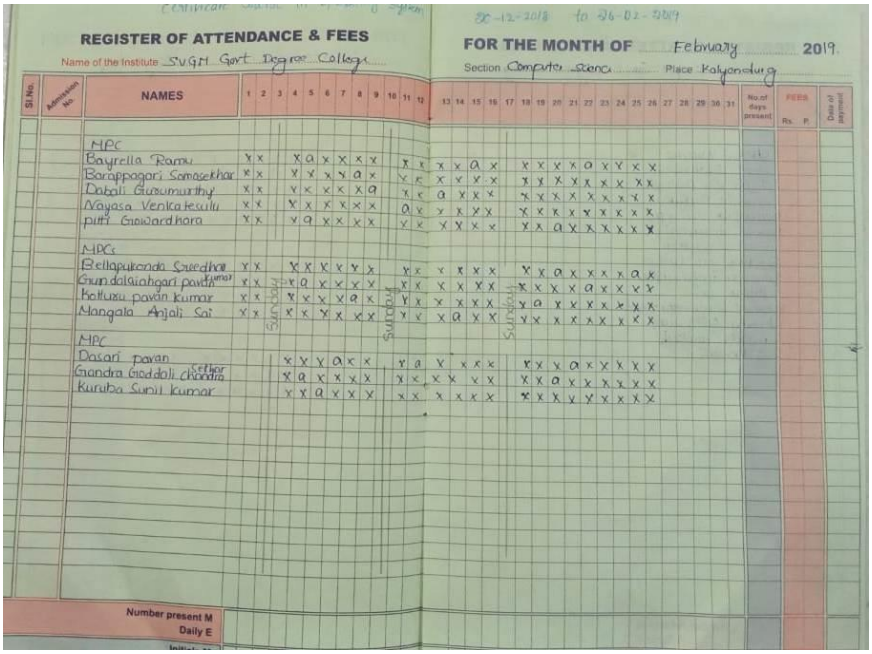

REGISTER OF ATTENDANCE & FEES

Name of the Institute SVGM Govt Degree College

FOR THE MONTH OF February 2019.

Section Computer Science Place Kalyandurg

Sl No	Admission No	NAMES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	No of days present	FEES Rs. P.	Date of payment
		MPC																																		
		Bayrella Ramu	X	X		X	a	X	X	X	X	X	X	X	X	X	a	X	X	X	X	a	X	Y	X	X										
		Barappagari Somasekhar	X	X		Y	X	X	X	a	X	Y	X	X	X	Y	X	X	X	X	X	X	X	X	X	X										
		Dabali Gurumurthy	X	X		Y	X	X	X	X	a	X	X	a	X	X	X	X	X	X	X	X	X	X	X	X										
		Nayasa Venkatesulu	X	X		Y	X	X	X	X	X	a	X	X	X	X	X	X	X	X	X	X	X	X	X	X										
		pitti Goswardhara	X	X		Y	a	X	X	X	X	Y	X	Y	X	X	X	X	X	X	a	X	X	X	X	X										
		MPCs																																		
		Bellapukonda Sreedhar	X	X		X	X	X	X	Y	X	Y	X	X	X	X	X	X	X	Y	X	a	X	X	X	a	X									
		Gundalgiahgari pavan Kumar	X	X		Y	a	X	X	X	X	X	X	X	X	X	X	X	X	X	X	a	X	X	Y											
		Kolluru pavan kumar	X	X		Y	X	X	X	a	X	Y	X	X	X	X	X	X	a	X	X	X	X	X	X											
		Mangala Anjali Sai	X	X		X	X	X	X	X	X	Y	X	a	X	Y	X	X	X	X	X	X	X	X	X											
		MPC																																		
		Dasari pavan				X	X	Y	a	X	X	Y	a	Y	X	X	X																				
		Gandra Goddali Chandra Sekhar				X	a	X	X	X	X	X	X	X	X	X	X																				
		Kuruba Sunil Kumar				X	X	a	X	X	X	X	X	X	X	X	X																				

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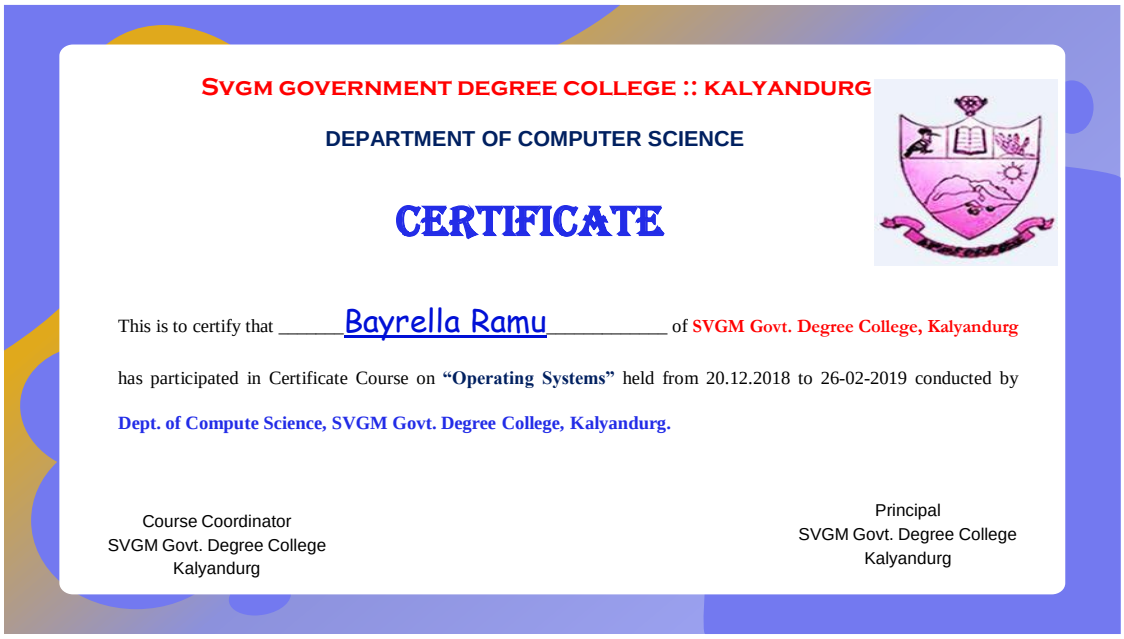
Certificate Model



SVGM GOVERNMENT DEGREE COLLEGE :: KALYANDURG

DEPARTMENT OF COMPUTER SCIENCE

CERTIFICATE

This is to certify that _____Bayrella Ramu_____ of SVGM Govt. Degree College, Kalyandurg has participated in Certificate Course on **"Operating Systems"** held from 20.12.2018 to 26-02-2019 conducted by **Dept. of Compute Science, SVGM Govt. Degree College, Kalyandurg.**

Course Coordinator
SVGM Govt. Degree College
Kalyandurg

Principal
SVGM Govt. Degree College
Kalyandurg