

Information Technology is the most flourishing and pervasive discipline that is witnessing unprecedented innovation in Technologies for Communication, Computation, and Interactivity. The Information Technology Department in FIEM started its journey in the year 2007 with an intake of 60+ students. The Department is presently offering UG programs in Information Technology (B. Tech in IT). The Department has well-qualified and experienced Teachers and highly efficient Technical Assistants. There are well-established independent laboratories with well-equipped systems. The laboratories have all the required facilities to learn the new Emerging Technologies covering the full syllabus. We, as a team, continue to take the Department of Information Technology to further heights of success and glory.

Team IT

Message from the Desk of Executive Director



In this nexus of technology and innovation, our IT department stands as the nucleus of innovation and progress. Each line of code, every solution crafted, propels us into the digital future. Our success is woven from the dedication, expertise and collaborative spirit. Let this newsletter be a testament to our shared journey and triumphs. As we forge ahead, may our collective efforts continue to redefine possibilities in the ever-evolving IT landscape. Stay inspired, stay united, stay committed and let us continue scripting success together.

Dr. Alope Kr. Ghosh, Executive Director, FIEM, Kolkata

Message from the Desk of HoD



In the near future, Information Technology will play an active role to Optimize, Scale Up, and Pioneer to deliver Sustainable Technology as suggested by Gartner. At this time, we need to prepare ourselves to gather all our resources and use them to prepare a better future generation with the capability to solve problems and help our society. The newsletter of the Information Technology Department "IT Insights" is a collective effort of students, alumni, teachers, industry experts, and our respected mentors to bring together a collage of the technical events, write-ups, details of toppers and placement news of the Department this year. I thank all the students, my dear colleagues, and respected mentors to support and help in this endeavor.

Dr. Poly Sil Sen, HoD, Information Technology Department

Message from the Desk of Principal



It is a matter of pride and satisfaction to preface "Edition V" issue of the newsletter "IT Insights" released by Information Technology department. This newsletter is meant for apprising all stakeholders about IT department events, student and faculty achievements, emerging areas of technology and the placement success record of the department. I applaud the contributors for their stimulated thoughts and varied hues in articles contributed by them. The wide spectrum of articles in different sections is creative, interesting and absorbing as it provides a platform for present students, alumni members and industry experts to share their thoughts on recent trends of technology and nostalgic college memories. I congratulate the editorial team and HOD of IT department for their commendable effort and enterprise in releasing this issue of newsletter within stipulated time.

Dr. Anirban Chakrabarty, Principal, FIEM, Kolkata



TECHNICAL EVENTS

Workshop



Fig 1.: A talk by Padma Shri Dr. Bimal Kumar Roy.



Fig 2.: Mr. Bivas Chatterjee delivering a lecture on cyber security

A 3-day workshop from 15th July, 2023 to 18th July, 2023 was organized as a joint venture by Information Technology, CSE(Data Science) and CA department on the Awareness of Cyber Security and its Applications was proved to be an enlightening experience, fostering a comprehensive understanding of the digital landscape. Esteemed Padma Shri Dr. Bimal Kumar Roy graced the occasion as the Guest of Honour, imparting profound insights into the realm of cybersecurity.

Distinguished speakers, Mr. Kanchan Mallick, Mr. Subhajit Das, and Mr. Bivas Chatterjee, shared their extensive knowledge, addressing contemporary challenges and innovative solutions in the ever-evolving cybersecurity landscape. Their presentations navigated through intricate topics, ensuring participants gained a holistic perspective on cyber threats, risk mitigation, and the importance of proactive security measures.

The workshop also featured a specialized training session conducted by the renowned training expert, Mr. Subhashis Ghosh. His hands-on approach and real-world scenarios provided attendees with practical skills to navigate and combat cyber threats effectively.

Participants left the workshop equipped with a heightened awareness of cybersecurity issues and a toolkit of strategies to safeguard digital assets. The event, enriched by the presence of such esteemed personalities, contributed significantly to enhancing the cybersecurity acumen of professionals and enthusiasts alike.



Technical Quiz for Prastuti

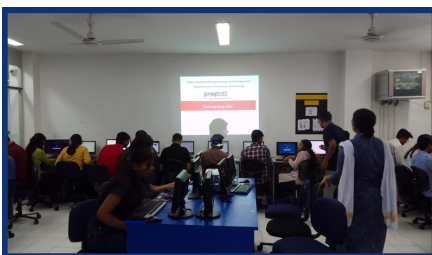


Fig 3.: Fourth year students attending technical quiz

The Information Technology Department of FIEM hosted an exhilarating and intellectually stimulating Technical Quiz Competition for final-year students of the department on 6th October, 23. The event aimed to challenge the students' knowledge and problem-solving skills in various aspects of information technology, serving as a platform to showcase their expertise and innovative thinking.

The event was structured into several rounds, each designed to test different dimensions of their technical acumen.

The competition commenced with a round consisting of multiple-choice questions covering a wide range of fundamental topics of Computer Science. The quiz was designed to evaluate the participants' foundational knowledge in areas such as programming languages, Operating System, Databases, Networking, and Cybersecurity.

The Technical Quiz Competition concluded with the following results:

1st Place: RAGHAV

2nd Place: ARIJIT DASGUPTA

3rd Place: NAMRATA SAHA

The Technical Quiz Competition of the IT Department was a resounding success, offering a platform for final-year students to showcase their technical acumen, problem-solving skills, and knowledge in various domains of Computer Science. The event not only promoted healthy competition but also encouraged the students to continuously enhance their technical knowledge and critical thinking abilities.



CodExcellence'23- Coding Competition of 3rd Year Using Java



Fig 4.: Coding competition under the supervision of IT department

The Information Technology Department of FIEM organized CodEXcellence'23 on 30th and 31st October, a coding competition that showcased the Java programming skills of our 3rd-year students. The event was not just about competition but also about innovation, as our dedicated teachers meticulously assessed the students' work, offering valuable feedback that enhanced their learning experience. This competition served as a significant learning opportunity, allowing the students to refine their coding skills and problem-solving abilities. Looking ahead to CodEXcellence in 2024, we are excited about the potential and possibilities it holds for our future technologists and innovators, confident that our students will continue to excel and contribute to the ever-evolving world of technology.

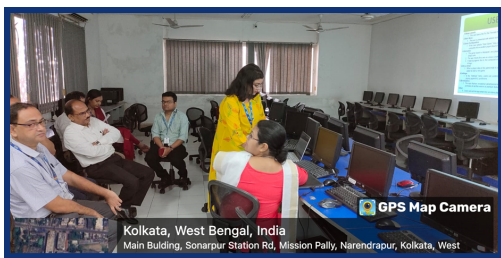


Fig 5.: Second year students presenting in project competition.

The Information Technology Department of FIEM recently organized a departmental Project Competition PRAKAUSAL'23 for 2nd year in the month of October, 2023 to celebrate the talent and innovation of students of the department. We were lucky to have the presence of our respected Principal Sir, Registrar Sir and the HoD of the CSE department among us. All the students of 2nd year participated in the project competition. The projects were developed using Python. The respected faculties of the department judged the projects very carefully. Their valuable insights and constructive feedback added an extra layer of educational depth to the competition. This Project Competition has worked as a learning platform for the students of 2nd year improving their technical knowledge and presentation skills. As we look forward to the next edition of Prakaushal, 2023, we remain excited about the incredible potential and the limitless possibilities that the future holds for our aspiring technologists and innovators.



Fig 6.: Participants from third year attending project competition.

The Information Technology Department of FIEM recently held a project competition called PRAKAUSAL'23 in October 2023 to showcase the talent and creativity of its 3rd-year students. The students used Java to create their projects, and the department's teachers meticulously assessed them, providing valuable feedback that enhanced the educational aspect of the competition. This project competition served as a learning opportunity for the 3rd-year students, helping them improve their technical skills and presentation abilities. Looking ahead to the next Prakaushal in 2023, we are excited about the potential and possibilities for our future technologists and innovators.

ACHIEVEMENTS

Students



Fig 1.: Certificate of achievement



Fig 2.: Certificate distribution

Pushpendu Dey of IT 5th sem (2021-2025 batch) has secured 3rd position jointly with four other students of this institute in the HOVERPOD event of National Student's Space Challenge Competition, which is jointly organised by ISRO and IIT Kharagpur, on 6th to 8th October, 2023. He has also secured 3rd position in the individual event of SpaceArt organised by IIT, Kharagpur on the said time period.



Fig 3,4: IT participants at SBH, certificate

In a noteworthy achievement, Arijit Dasgupta and Pratik Roy, both fourth-year Information Technology students at FIEM, secured the 4th position at the Smart Bengal Hackathon (SBH) held in April 2023. The event, organized by the Government of West Bengal and hosted at RCCIT college, showcased their exceptional skills and innovative prowess. The Information Technology department at FIEM congratulates them on this prestigious state-level success.

This recognition not only highlights the individual talents of Arijit and Pratik but also reflects positively on the institution's commitment to fostering innovation and excellence in technology. Congratulations to the talented duo, and best wishes for their future endeavors.

Faculty

Prof. Debjyoti Basu has recently (20th October, 2023) published his research work along with other co-authors in a reputed journal named "Multimedia Tools and Applications" (a Springer Link group of journals). The title of the paper is A bi-stage approach to North Indian raga distinction. Here, a machine intelligence based bi-stage approach has been introduced for the distinction of North Indian Sandhi Prakash ragas . The DOI has been given below.
<https://doi.org/10.1007/s11042-023-17322-5>

Prof. Sushmita Panda has recently (24th November ,2023) presented her research work along with other co-authors in a reputed conference named ICCTE(International Conference on Computational Technologies and Electronics). The title of the paper is Effect of Increasing Multiple-Interface Enabled Nodes in An Opportunistic Network: A Case Study.



Fig 5.: Prof. Sushmita Panda receiving certificate of paper presentation

Prof. Subhasis Mitra has recently (29th November, 2023) published his research work titled "Extended Cooccurrence Histogram Method for Rice Leaf Image Classification" in a journal named "International Journal of "All Research Education & Scientific Methods" (An ISO & UGC Certified Peer-Reviewed/ Refereed Journal UGC Journal No:7647) . In this work he has implemented the cooccurrence histogram method to two different color space of an image. The K-nearest neighbors (K-NN) classifier is used to classify the rice image to detect the infected one . The link of the paper: http://www.ijaresm.com/uploaded_files/document_file/Subhasis_MitrarU1v.pdf

DOWN THE MEMORY LANE

Thoughts about FIEM IT Dept

I wanted to take a moment to express my sincere appreciation for the exceptional work being done by the IT department of F.I.E.M.

The dedication and commitment of the faculty members providing a top-notch educational experience is truly commendable. I still remember my college days when a seamless and efficient learning environment was created for us which played a pivotal role in shaping the future of aspiring engineers and technologists, even received the same feedback from my brother & relatives that the good work still continues.

As an IT professional who is working as a Java Technical Lead now, I still remember the days when Subhasis sir introduced us to this wonderful language Java, Prosenjit sir's DBMS classes, Niladri & Arindam sir's guidance during the final year project. Finally Santanu & Jaydip sir's invaluable support helped us a lot during our placement time.

I can say this on behalf of the entire batch that the total credit goes to our beloved teachers who not only well-equipped us with technical skills but also instilled us with a spirit of curiosity and a drive to make meaningful impact in the IT industry.

Thank you for your commitment to excellence and for being a source of inspiration for all of us. The IT department at F.I.E.M is truly a beacon of knowledge, and I am proud to see the remarkable work you do in preparing the future leaders of the IT world.

With deep admiration and gratitude,
Indrajit Chakraborty
Assistant Vice President, CITI Digital Banking



Indrajit Chakraborty is working as a Java Technical Lead (Role - Assistant Vice President) under CITI Consumer & Private Banking. Leading API Platform Engineering team which is managing & supporting Java Spring Boot based micro services for Asia Pacific (APAC), Europe Middle-East (EMEA) markets.

I am part of a Framework/Platform team providing cloud based tools & gateway (built on top of Spring Cloud) to multiple application teams under CITI for hosting & maintaining their cloud applications as well as creating a base of CITI Bank safety & security mechanisms.

PLACEMENT RECORDS



Fig 1.: Placement statistics of IT department for the last five years

The Department of Information Technology of Future Institute of Engineering and Management has garnered commendable placement success with consistently high placement rate.

From the inception, the department has performed as a hub for nurturing top-tier IT professionals for the major leading recruiters such as Cognizant (CTS), Tata Consultancy Services (TCS), Wipro, Accenture, and Infosys and other MNC'S.

Prof. Prosenjit Mukherjee, Department of Information Technology, FIEM

INDUSTRY INSIGHTS

Smart pointers: Smarter way of handling dynamic memory allocations in modern C++
Kausik Naguri, Computer Scientist I, Adobe, Bangalore

Smart pointers have now become integral part of modern C++. It is based on a C++ programming technique called RAII (Resource Acquisition Is Initialization), a powerful technique with a little confusing name.

Why Smart Pointers:

Before jumping into the concepts of smart pointers, let us first understand the issue with regular pointers. There are two ways of allocating memory in C++, static and dynamic.

Let us assume that we have a class MyClass. Creating an object statically would look like- `Myclass obj1;`

Whereas dynamic creation of an object will look like-

```
Myclass *ptr = new MyClass();
```

A major difference between the two types of memory allocation lies in the deallocation.

A statically created object is allocated in the stack memory and is cleaned up as soon as the object goes out of scope But a dynamic object is allocated in the heap memory and has to be explicitly deleted like

```
delete ptr;
```

This has to be done before ptr goes out of scope. Otherwise only pointer ptr will be deleted but the memory it is pointing to i.e. the object we created using new is still present but no pointer is referring to it any longer, leading to that memory becoming unusable. This erroneous phenomenon is called memory leak.

Now suppose there is some exception in between the new and the delete statement and the program execution goes out of the scope without getting a chance to delete the object. The program can still lead to a memory leak. Smart pointers solve this issue.

RAII (Resource Acquisition Is Initialization):

RAII technique makes use of the fact that all static objects are always cleared up automatically. It says to acquire any resource (e.g.- dynamic memory, file handles, synchronization locks etc.) in the constructor of a class, release those resources in the destructor of that class and only create a static object of that class whenever those resources are required. This allows a C++ programmer to write clean code without requiring any garbage collector (unlike other languages such as Java or C#), which is actually an overhead to the runtime environment.

How Smart Pointers work:

A smart pointer is nothing but an RAII wrapper class over a raw pointer. A simple smart pointer would look like the following.

```
template<typename T>
SmartPtr
{
private:
T* ptr; public:
SmartPtr(T* ptr) : ptr(ptr) {}
~SmartPtr()
```

In the above example we have created a template class which takes a pointer of any given type and maintains its lifetime. The object held by the pointer

```
SmartPtr<Myclass> sPtr(new MyClass());
```

is deleted in the destructor. So, if we create the SmartPtr object statically and pass the dynamic object of MyClass we discussed earlier, the destructor will get called as soon and the MyClass object will also get deleted automatically. It can be used like the following.

Smart Pointers in standard C++ library:

Modern standard C++ library offers a wide range of different smart pointers. Two of them which are very common and vaey frequently used are std::unique_ptr which allows only one smart pointer object two hold a particular pointer. Sharing of the same raw pointer between two unique_ptr objects is prohibited. Another frequently used smart pointer is std::shared_ptr which maintains a reference count of the raw pointer. The reference count is decreased everytime the destructor is called and finally deleted when the reference count becomes 0.

References:

- <https://learn.microsoft.com/en-us/cpp/cpp/smart-pointers-modern-cpp?view=msvc-170>
- https://en.cppreference.com/book/intro/smart_pointers
- <https://en.cppreference.com/w/cpp/language/raii>
- <https://stackoverflow.com/questions/2321511/what-is-meant-by-resource-acquisition-is-initialization-raii>

Kausik Naguri is an IEM alumnus and currently working as Computer Scientist I in Adobe, Bangalore. After completing his B. Tech from IEM, He completed ME in CSE from Jadavpur University in 2015. During his M.E. thesis work, he has published two papers in conferences held at Rome, Italy and Boston, USA.



His thesis work acquired good appreciation in these conferences. He initially joined Siemens and moved to Bangalore. Over the last seven and a half years He has worked as a software developer in Siemens, Intuit. He is currently working in Adobe. Throughout his career he has mostly worked as a C++ developer and his area of expertise includes C++, C#, WPF, OOPS, Data structure and Algorithms.

FROM THE PENS OF TEACHERS

IT in Healthcare

Dr. Poly Sil Sen, Associate Professor and Head, Information Technology Department

The usage of Information Technology in healthcare has been increasing exceptionally over the last few decades. Digital health market size in Billion Dollars USD can be observed against years: 2022-2032 in the following chart [4].



Fig 1: Digital Health Market Size [4]

“Gartner forecasts that healthcare and life sciences enterprise IT spending will grow by 9.1% in 2023 to reach \$240.5 billion in constant currency “[1].

Personalized Healthcare - An Electronic Health Record is a repository of all health data-related information of a patient covering medical complaints, investigations, prescriptions, clinical signs, symptoms, assessments, medical history, admission to a care unit, continuous monitoring data, etc.

This record can only be maintained with the help of data stored in a cloud preferably. Cloud services ensure that the Electronic Health Record is available everywhere at the time of need. Insertion, modification, and deletion of EHR is possible easily with the help of a standard computing device and a standard Internet connection. In order to design and keep an Electronic Health Record, an Object-oriented Concept is a must as a health record is not structured and may have different types and formats of data – X-ray, ECG, EEG, MRI, other laboratory tests, data for mental fitness, etc. The volume of health data is huge. There is a timeline nature of Electronic health data. Continuous monitoring data from different health parameter measuring devices and sensors are to be captured, stored, and analyzed over time.

In order to work with healthcare data, one needs to learn about different related standards. Ontologies may help in this respect. Ontology works as a knowledge repository for both humans and computers. Open Standards are preferable in a country like India as the standards to be bought are costly and preferably used by companies willing to make a lot of profit in the healthcare field. A country like India is answerable to the masses for offering healthcare services that should not be provided in return for huge costs. An emergency service should not be provided to a human being at the cost of huge medical bills.

Remote Patient Monitoring and Care – An elderly patient or a severely ill patient confined to bed may need to be monitored if required every other second. Heart rate and blood pressure monitors, wearable ECG monitors, and glucose meters are very helpful in the process of measuring glucose and blood oxygen levels. Real-time monitoring and alerts can be used by care persons to detect abnormalities in medical parameters. This methodology can be used with the help of sensors to get patient care services in remote areas, emergencies, natural calamities, or disasters.

Telemedicine- Patients may get assistance and support from doctors at any time and any place by providing investigation reports if applicable and acquiring e-prescriptions over the Internet using audio, video calls, etc.

Internet of Medical Things & Wearables- In today's fast life different medical wearables are available and various basic medical parameters can be easily measured with these devices. In this way, one can keep a check on the health status of oneself. Wireless Body Area Networks (WBANs) are also used for this purpose with different devices. Internet of Things (IoT)-enabled devices have made remote monitoring in the healthcare sector possible. Data collected from IoT devices can help physicians identify the best treatment process for patients.

Usage of different Sensors- Sensors are very important to assist in digital healthcare assistance. Some important sensors used are: Temperature probes, Force sensors: for kidney dialysis machines, Airflow sensors: for anesthesia delivery systems, laparoscopy, heart pumps, etc. Pressure sensors: Used in infusion pumps and sleep apnea machines, Implantable pacemaker, Oximeter, Glucometer, Electrocardiogram sensor, Heart rate sensor, Electroencephalogram sensor: for measuring the electrical activity of the brain, Electromyogram sensor for recording electrical activity produced by skeletal muscles, Respiration rate sensor etc [4].

Artificial Intelligence and Machine Learning- Health data need to be analyzed to decide to provide care of different types such as medication, therapy, surgery, care at home, and referral to some other doctor or care place. Decision Support Systems can help in this work. Medical images can be analyzed to conclude about a disease or severity of the disease. Public health data can be fed to data analytics software to provide suggestions on corrective measures that can be taken to improve public health in a region. If a particular category of human being belonging to a certain age group, gender, or place is suffering from a certain medical problem then steps can be taken to take care of that particular type of problem. The social network is a repository of the vast amount of data that can be used to find out a person's emotional health.

Embedded Devices- Healthcare services need different types of healthcare software used under different conditions with disparate types of devices for different purposes in different platforms and with different scales of implementation.

Healthcare Data Science- The study of healthcare data science is important not only for profit making but for monitoring of trends of disease, symptoms, basic amenities of living and lifestyle of a person. This can be used for taking care of general health of human beings.

Medical Imaging- Study of medical images is important to conclude about a disease and its severity. A medical image can be enhanced to detect a disease easily using. Designing 3D Models, designing equipment and artificial limbs, and human anatomy 3D modeling is possible with the help of medical imaging [6].



Fig 2: The Digital Transformation of Healthcare [6]

- [1] <https://www.gartner.com/en/documents/4282399>
- [2] <https://www.forbes.com/sites/bernardmarr/2022/12/06/the-top-5-healthcare-trends-in-2023/amp/>
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- [4] https://www.rfwireless-world.com/Articles/Medical-sensor-basics-and-medical-sensor-types.html#google_vignette
- [5] <https://www.precedenceresearch.com/digital-health-market>
- [6] <https://www.sap.com/sea/industries/healthcare.html>

Navigating Software Development with the Spiral Model

Prof. Sushmita Panda, Department of Information Technology

Abstract:

This paper explores the application of the Spiral Model in software development, emphasizing its iterative and adaptive nature. Introduced by Barry Boehm, this model provides a systematic approach to managing risks and uncertainties in large, complex projects. The paper discusses the key phases of the Spiral Model, its benefits, and how it facilitates effective software development in dynamic environments.

1. Introduction:

The software development landscape is marked by complexity, uncertainties, and evolving requirements. The Spiral Model, proposed by Boehm in 1986, addresses these challenges through an iterative and risk-driven approach. This paper delves into the practical aspects of implementing the Spiral Model, highlighting its advantages in navigating the intricacies of software development.

2. Background:

The Spiral Model integrates elements from both the waterfall model and prototyping methodologies. It divides the software development process into a series of cycles, each encompassing planning, risk analysis, engineering, evaluation, and adaptation. This blending of approaches ensures flexibility, adaptability, and effective risk management.

3. Key Phases of the Spiral Model:

Identification of Objectives:

The process begins with stakeholders collaboratively defining project objectives, scope, and constraints.

Risk Analysis:

Risks, encompassing technical, operational, and scheduling aspects, are assessed and strategies for mitigation are developed.

Engineering:

Development takes place in iterative cycles, with the project broken into manageable components for build and testing.

Evaluation:

Stakeholders receive prototypes or partial systems for evaluation, facilitating early feedback and alignment with user expectations[2].

Planning for the Next Iteration:

Based on feedback, the next spiral is planned, refining project goals, reassessing risks, and defining objectives for the next iteration.

4. Benefits of the Spiral Model:

Flexibility and Adaptability:

The model accommodates changes in requirements, allowing adjustments based on feedback during the development process[1].

Risk Management:

Continuous risk assessment and mitigation reduce the likelihood of project failure due to unforeseen challenges.

Communication and Collaboration:

The model promotes constant communication and collaboration, ensuring stakeholders and team members are aligned throughout the development lifecycle.

5. Case Studies:

This section presents real-world examples of successful software development projects that employed the Spiral Model. It highlights how the model's adaptability contributed to project success in dynamic environments.

6. Conclusion:

Navigating software development with the Spiral Model offers a systematic and adaptive approach. Its emphasis on risk management, iterative development, and continuous evaluation make it well-suited for projects in dynamic and evolving environments. The paper concludes with a reflection on the model's enduring relevance and its contribution to successful software delivery.

7. References:

- [1]. <https://www.geeksforgeeks.org/advantages-and-disadvantages-of-using-spiral-model/amp/>
- [2]. <https://www.onestoptesting.com/sdlc-models/spiral-model.asp>

TECHNOLOGY TRENDS

Use of ChatGPT in Software Development

Prasenjit Basu, Assistant Professor, Information Technology Department

In the realm of software development, ChatGPT plays a multifaceted role, offering developers a versatile tool for various tasks throughout the development lifecycle. One of its key applications lies in code generation. Developers can leverage ChatGPT to produce code snippets, aiding in the rapid prototyping of solutions and facilitating the coding process. This can be particularly helpful for routine or boilerplate code, saving time and reducing the likelihood of errors.

Documentation is another area where ChatGPT proves beneficial. It can assist in drafting documentation for code, APIs, or entire projects, ensuring that comprehensive and coherent explanations are provided. This is especially valuable for teams working on collaborative projects, as it streamlines the documentation process and promotes consistency.

When faced with programming challenges, developers can turn to ChatGPT for assistance. Whether it's debugging, algorithm design, or choosing the most suitable data structures, ChatGPT can offer insights and suggestions to help overcome obstacles. This fosters a dynamic and interactive approach to problem-solving.

Furthermore, ChatGPT can be integrated into development environments to provide an interactive and conversational interface. Developers can simulate conversations with ChatGPT to test and refine chatbot functionalities, ensuring a seamless user experience in applications that involve natural language interactions.

In collaborative settings, ChatGPT serves as a virtual teammate, contributing to brainstorming sessions and providing creative input. It can assist in ideation, offering alternative solutions, and fostering innovation within the development team.

While ChatGPT enhances productivity, it's essential to note that it's not a substitute for domain-specific expertise. Developers should use it as a complementary tool, combining the strengths of AI with human insights to create robust and efficient software solutions. As the field of AI continues to evolve, integrating ChatGPT into software development workflows represents a strategic move towards more efficient, collaborative, and creative coding practices.

QUIZ-BEE

1. Question: What two words every programmer learned to code first?
2. What is the most popular programming problem?
3. What is the golden rule in programming?
4. What is the biggest lie in computer programming?
5. How programmers open a Jar?
6. What are the most expensive programming languages?
7. Why is Python slow?
8. What did the binary search tree say to its parent?
9. Why did the linked list go to therapy?
10. Why do programmers prefer trees over forests?

1. Answer: "Hello, world."
2. Answer: Missing a Semicolon.
3. Answer: If it works, don't touch it.
4. Answer: HTML is a programming language.
5. Answer: They use Java.
6. Answer: Ruby, Perl, and Crystal.
7. Answer: Because of IDE.
8. Answer: "You're root of all my problems!"
9. Answer: It had too many unresolved pointers in its past!
10. Answer: Because in trees, there are no leaves left! unvisited!

Prof. Prasenjit Basu, Department of Information Technology, FIEM

CLASS TOPPERS

4th Year



Name : Reshma Ukil
Rank : 1st
CGPA : 9.44



Name : Sudeshna Roy
Rank : 2nd
CGPA : 9.40



Name : Sayan Mukherjee
Rank : 3rd
CGPA : 9.37

3rd Year



Name : Arijit Dasgupta
Rank : 1st
YGPA : 8.78



Name : Anushua Mondal
Rank : 2nd
YGPA : 8.65



Name : Rakesh Saha
Rank : 3rd
YGPA : 8.63

2nd Year



Name : Pritam Bal
Rank : 1st
YGPA : 9.045

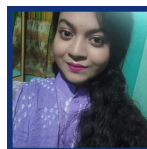


Name : Joydeb Saha
Rank : 2nd
YGPA : 8.655



Name : Tania Acharya
Rank : 3rd
YGPA : 8.51

1st Year



Name : Ananya Pal
Rank : 1st
YGPA : 8.86



Name : Om Prakash Roy
Rank : 2nd
YGPA : 8.84



Name : Ankit Shaw
Rank : 3rd
YGPA : 8.63

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