

**PUNJAB GROUP OF COLLEGES**

**NEW ERA OF TECHNOLOGY**





# INFORMATION TECHNOLOGY

Information Technology (IT):

**Use of computers**, networking, and devices to create, process, store, secure, and **exchange electronic data**.

- IT impacts homes, workplaces, and social lives, transforming how we interact and operate.
- IT is one of the most exciting and **rapidly evolving** fields today.

**\$9 TRILLION**

GLOBAL MARKET

**PKR 1 TRILLION**

PAKISTANI MARKET

**25 to 30%**

ANNUAL GROWTH

**62% HIKE**

IN IT EXPORTS





○ **CORPORATE JOB**

**OR**

○ **ENTREPRENEURSHIP**

○ Software House

○ Software House

○ Freelancing







# SOFTWARE HOUSE

- Software Houses:  
Companies that create and maintain software solutions.

Mobile apps

Websites

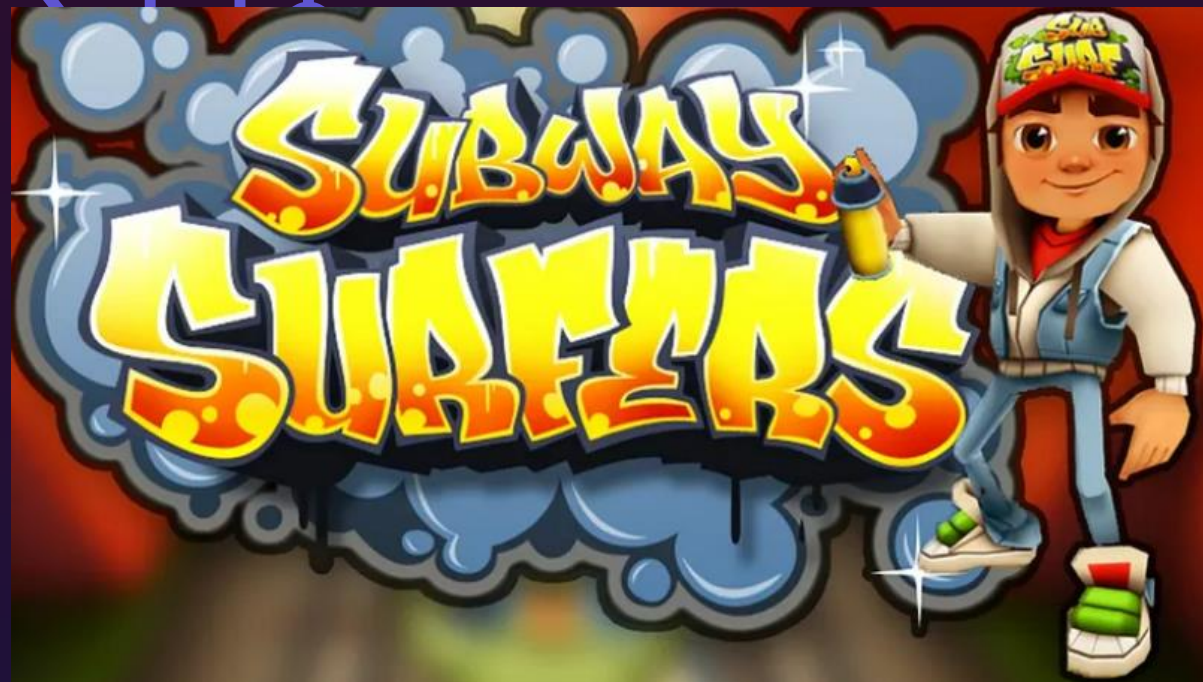
Portals

Games





# ACTIVITY TIME



Let's go back a few years. Company's business team is here. They have a vague idea as to what they want to develop. What is the first thing that we need to do?



# THE DISCOVERY & PLANNING PHASE – UNDERSTANDING BUSINESS REQUIREMENTS



The discovery phase defines the essential features and functionalities of the platform. This phase includes identifying user registration, core modules, search functionality, content management, e-commerce and integration with third-party services.

## Professional Roles

- **Business Analyst:** Gathers and documents requirements from stakeholders.
- **Product Owner:** Oversees the project, ensuring it meets business objectives.
- **Project Manager:** Coordinates the project, managing timelines and resources.

**Average Salary Range 0 to 5 years: PKR 55,000 – 350,000**

### SKILLS REQUIRED

- Organizational Skills
- Communication Skills
- Problem-Solving
- Analytical Thinking
- Technical Documentation

### TOOLS

- MS Office
- MS Project
- Jira
- Confluence
- Slack
- Monday.com
- Trello

### FURTHER STUDY OPTIONS

- Computer Science - BS (CS)
- Business Administration – BBA
- Information Technology - BS (IT)
- Business & Information Technology - BBIT



# DESIGNING THE BLUEPRINT – SOFTWARE DESIGN

Design the user interface (UI) and user experience (UX) of the platform. This includes creating a seamless shopping experience with easy navigation, product listings, and checkout processes.

## Professional Roles

- **UI Designer:** Designs the visual elements and layout of user interfaces to ensure an attractive and user-friendly interaction experience.
- **UX Designer:** Focuses on optimizing the overall user experience by improving usability, accessibility, and satisfaction through research and design.
- **Graphic Designer:** Creates visual content such as logos, advertisements, and marketing materials to communicate messages and enhance brand identity.

**Average Salary Range 0 to 5 years: PKR 50,000 – 250,000**

### SKILLS REQUIRED

- User-Centered Design
- Proficiency in Design Tools
- Creativity
- Attention to Detail
- Communication
- Collaboration

### TOOLS

- Figma
- Adobe Photoshop
- Adobe XD
- Adobe Illustrator
- Sketch
- Canva
- Invision

### FURTHER STUDY OPTIONS

- Bachelor of Multimedia Art Degree (NCA)
- Product Design (4 yrs Degree)
- Visual Communication Design
- BS Computer Sciences (CS)
- BS Information Technology (IT)



# BUILDING THE DREAM – DEVELOPMENT

Develop and build the functionalities of the desired software, for example user accounts, payment processing, and order fulfillment.

## Professional Roles

- **Front-End Developer:** Develops the user interface and client-side features.
- **Back-End Developer:** Manages server-side logic, databases, and APIs.
- **Software / Full Stack Developer:** Codes the core functionalities of the platform by Handles both front-end and back-end development.
- **Software Architect:** Designs the overall system architecture.

**Average Salary Range 0 to 5 years: PKR 50,000 – 550,000**

### RESOURCES FOR SKILLS

- Proficiency in Coding languages
- Analytical thinking
- Algorithm design
- Collaboration
- Problem Solving

### TOOLS

- Programing Languages like (Html), JavaScript, PHP, .NET, JAVA, C#
- Git-Hub
- JIRA
- Web Development/ Ecommerce: WordPress, Shopify, etc.
- Postman

### FURTHER STUDY OPTIONS

- Computer Science - BS (CS)
- Software Engineering - BS (SE)
- Computer Engineering - BS (CE)





# BUILDING THE INFRASTRUCTURE – NETWORKING AND DEVOPS

Set up and manage the infrastructure needed to support the platform, including servers, networks, and deployment pipelines.

## Professional Roles

- **DevOps Engineer:** Manages continuous integration/continuous deployment (CI/CD) pipelines and infrastructure automation.
- **Network Administrator:** Configures and manages network infrastructure.
- **Systems Engineer:** Oversees server setup and maintenance.
- **Cloud Engineer:** Manages cloud services and infrastructure.
- **Database Administrator (DBA):** Manages and optimizes databases.
- **Information Security Engineer:** Responsible for managing the data security within an Organization.

**Average Salary Range 0 to 5 years: PKR 50,000 – 350,000**

### RESOURCES FOR SKILLS

- Collaboration
- Monitoring and Logging
- Firewall and Security
- Vendor Management
- Performance Optimization

### TOOLS

- Jenkins
- GIT
- Containerization (Docker, Kubernetes)
- Cloud Infrastructure (AWS, Azure)
- VMware
- Windows / Linux

### FURTHER STUDY OPTIONS

- Computer Science - BS (CS)
- Software Engineering - BS (SE)
- Computer Engineering - BS (CE)
- Cyber Security - BS (CY)
- BS Computer Network and Security



# ENSURING QUALITY – QUALITY ASSURANCE AND SUPPORT

Test the platform to ensure all features work as intended and meet quality standards. QA includes functional testing, performance testing, and user acceptance testing.

## Professional Roles

- **QA Engineer:** Designs and executes test cases to identify bugs.
- **Test Automation Engineer:** Develops automated tests for efficiency.
- **Quality Assurance Analyst:** Ensures product meets quality standards.

**Average Salary Range 0 to 5 years: PKR 60,000 – 400,000**

### RESOURCES FOR SKILLS

- Programing Skills
- Test case writing
- Defect Documentation
- Critical analysis
- Comparative analysis
- Collaboration with developers

### TOOLS

- Selenium
- Jira / Slack
- Cypress
- Postman / JMeter
- Appium
- Confluence

### FURTHER STUDY OPTIONS

- Computer Science - BS (CS)
- Software Engineering - BS (SE)
- Computer Engineering - BS (CE)
- Information Technology – BS (IT)





# MANAGING THE DATA – DATA MANAGEMENT

Handle data management, including customer data, product data, and sales analytics. This involves creating and managing databases and leveraging data for insights and decision-making.

## Professional Roles

- **Data Engineer:** Develops data pipelines and maintains data infrastructure.
- **Data Analyst:** Analyzes and Interprets data to generate reports and support business decisions.
- **Machine Learning /AI Engineer:** Implements machine learning models for features like personalized recommendations.

**Average Salary Range 0 to 5 years: PKR 60,000 – 450,000**

### RESOURCES FOR SKILLS

- Critical & Analytical thinking
- Programing Skills
- Database Skills
- Statistics and Mathematical Skills
- Data Representation

### TOOLS

- Programming Languages (Python, R, JavaScript, SQL etc.)
- Cloud Computing (AWS, Azure, GCP)
- Kafka, Hadoop

### FURTHER STUDIES OPTIONS

- Artificial Intelligence - BS (AI)
- Data Sciences – BS (DS)
- Computer Science - BS (CS)
- Software Engineering - BS (SE)
- Computer Engineering - BS (CE)

# OPEN HORIZONS FOR ICS STUDENTS







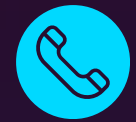
## CONCLUSION

- By choosing IT, you're not just picking a career; you're embracing a dynamic and transformative field with boundless opportunities. You're positioning yourself at the cutting edge of innovation, where your skills and creativity will shape the future. The world is your stage, and the possibilities are limitless.
- Feel proud and excited about your journey into IT. It's a field where your work can change the world, and your career can take you to new heights. **Welcome to a profession that's not just about technology but about creating a better tomorrow!**





SCAN THE QR FOR MORE INFORMATION



0800-78608



<https://pgc.edu/tech-careers/>



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THANK YOU

