Al-Balqa' Applied University

جامعة البلقاء التطبيقية

تأسست عام 1997

Electronic Engineering

Specialization	Computer Technology
Course Number	20404214
Course Title	Microprocessor Applications Lab
Credit Hours	1
Theoretical Hours	0
Practical Hours	3

Brief Course Description:

❖ Lab in support of the Microprocessor course conducted in small groups. Each student must complete the assigned work in the lab time. In addition to Data sheets, microprocessor demonstration, programming and Application in control circuits

Course Objectives:

Upon the completion of the course , the student will be able to :

1. To understand the importance of MPU in our life.
2. To understand the application of sensors and transducers.
3. To understand the application of MPU in industry
4. To enable the student to build microprocessor based applications

Detailed Course Description:

Lab Number	Lab name	Lab content	Time Needed
1.	**Address Decoding**		
2.	**Data Input**		
3.	**Data Output**		
4.	**Static RAM Interfacing**		
5.	**Introduction to the MUART**		
6.	**Display Multiplexing using (8256 MUART)**		
7.	**Software Controlled Serial Data Communications**		
8.	**Hardware Controlled Serial Data Communications**		
9.	**6840 Programmable Timer Module (PTM) Input and Output**		
10.	**Microprocessor/ DAC interfacing and Applications**		
11.	**A/D Converter Interfacing and Applications**		

Evaluation Strategies:

Exams		Percentage	Date
Exams	Midterm Exam	20%	--/--/----
	Practical experiments and assignments	30%	--/--/----
	Final Exam	50%	--/--/----

Teaching Methodology:
 ❖ Laboratory

Text Books & References:
References:
1. 8085 Microprocessor Interfacing and Applications. By: A.C. Stugaard, Jr. Heathkit Educational Systems.
2. Microprocessor Architecture, Programming, and Systems Featuring the 8085, by William Routt, 2006

Electronic Engineering

Specialization	Computer Technology
Course Number	20404213
Course Title	Microprocessors Applications
Credit Hours	3
Theoretical Hours	3
Practical Hours	0

Brief Course Description:
❖ Interfacing basics, interfacing to RAM, Programmable I/O devices, serial data communications, programmable timers, A/D and D/A converters, sensors, position, proximity and force sensing, electronic control devices and circuits, microprocessor application

Course Objectives:
Upon the completion of the course , the student will be able to :
1. To understand the idea of using and interfacing microprocessors.
2. Describe how to interface the 8085 with "outside world".
3. Input/output parallel data through a multifunction microprocessor support controller (MUART),   And to provide handshake control of parallel I/O operations.
4. Basic concepts of serial communication and how to provide both software and hardware Parallel /Serial conversion for a microcomputer
5. To understand the application of microprocessors in industry

Detailed Course Description:

Unit Number	Unit name	Unit content	Time Needed
1.	**Interfacing Basics**	▪ Busses ▪ Interfacing concepts ▪ Address decoding ▪ 3-state logic and buffering ▪ 8085 interfacing, address lines, data lines, 8085 control/static lines ▪ 8085 interrupts ▪ Interfacing with switches, displays	
2.	**Interfacing To RAM**	▪ Static RAM interfacing ▪ Connecting static RAM to the MPU ▪ Dynamic RAM interfacing ▪ Connecting dynamic RAM to the MPU ▪ Connecting EPROM to the MPU	
3.	**Programmable I/O devices**	▪ Programmable parallel input/output ports. ▪ Interfacing and addressing. ▪ Handshaking with MUART. ▪ Interrupt control using MUART	
4.	**Serial Data Communications**	▪ Serial communication basics, serial data format and structure ▪ Parallel/ serial conversion software and hardware conversion ▪ Serial I/O using 8256 MUART	
5.	**Programmable Timers**	▪ Programmable timer concepts ▪ The 6840 PTM structure, interfacing and addressing ▪ Counter/timer section of the MUART	

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6.	**A/D and D/A Converters**	▪ Interfacing 8085 to A/D and D/A converters ▪ MPU applications using A/D converters
7.	**Sensors**	▪ Sens:Temperature sensing: thermo resistive devices, resistance temperature detectors, thermistors. ▪ Thermoelectric temperature Sensing Devices: Semiconductor Devices. ▪ Optical Sensing: Photoconductive Devices, photovoltaic devices and photodiodes, phototransistor, and Integrated optical Sensing Devices
8.	**Position, Proximity and Force Sensing**	▪ Position sensing. ▪ Proximity sensing ▪ Force sensing
9.	**Electronic Control Devices and Circuits**	▪ Open collector drivers, power transistors ▪ Thyristors, relays ▪ MPU control of DC motors
10.	**Microprocessor Applications**	▪ MPU application in: consumer applications, automobile, home appliances ▪ Industrial applications ▪ Business applications

Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	
Discussions and lecture Presentations			

Teaching Methodology:
- ❖ Lecture

Text Books & References:
Textbook:
1. 8085 Microprocessor Interfacing and Applications. By: Andrew C. Staugaard,Jr. Heathkit Educational Systems.

References:
1. Microprocessor Architecture, Programming, and Systems Featuring the 8085, by William Routt, 2006

Electronic Engineering

Specialization	Computer Technology
Course Number	20404231
Course Title	Introduction to C++ Programming Language
Credit Hours	2
Theoretical Hours	2
Practical Hours	0

Brief Course Description:

❖ The goal of this course is to introduce students to the skills of reading, understanding and development C++ code. It focuses on the introduction to primitive data types and variables. Then, its proceeds to the introduction of main C++ language constructions such as condition and looping statements. After this, it migrates to explaining the concepts of functions, arrays and matrices

Course Objectives:

Upon the completion of the course , the student will be able to :

1. To understand the concept of computer programming.
2. To understand the steps of writing, saving, editing programs.
3. To understand of program compilation. Linking and execution
4. To understand how to write an application program

Detailed Course Description:

Unit Number	Unit name	Unit Content	Time Needed
1.	**Introduction to Computer Skills**	▪ General lecture on how use Turbo C++ . ▪ Running, navigation through the menu items. ▪ Writing a simple program "Hello word" ▪ Enhancing the editing capabilities, running and compilation of program	
2.	**Data Types and Variables**	▪ Declaration of variables and constants ▪ Distinguishing between the different data types ▪ Using of cin and cout classes ▪ Using of arithmetical operations	
3.	**Conditional and Multiconditional Operators**	▪ Operator if and its usage during programming ▪ The if/else selection structure ▪ The use of switch statement ▪ Operators break and continue	
4.	**Programming of Iterative Processes**	▪ Looping in C++, the for statement ▪ The use of while and do while statement ▪ Loops block nesting in C++	
5.	**Introduction to Functions in C++**	▪ Declaration of functions, its implementation and calling ▪ Function prototypes ▪ Delegation of program control and returning of result ▪ Local and global variables ▪ The usage of recursive functions	
6.	**Arrays and Matrices**	▪ Declaring arrays ▪ Using and manipulation by single and multidimensional arrays ▪ Algorithm of searching and sorting. ▪ Operations on matrices	

Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	
Discussions and lecture Presentations			

Teaching Methodology:
❖ Lectures

Text Books & References:
Textbook:
1. Zak,Diane.2001. An Introduction to Programming with C++. Second Edition

References:
1. Deitel & Deitel .C++ How to Program, fourth edition, Prentice Hall, 2004
2. Nell Dale. A Laboratory course in C++, Jones and Bartlett Publishers, fourth edition, 2004

Electronic Engineering

Specialization	Computer Technology
Course Number	20404232
Course Title	Introduction to C++ Programming Language Lab
Credit Hours	1
Theoretical Hours	0
Practical Hours	3

Brief Course Description:

❖ Laboratory works must concentrate on writing and executing programs using C++ language. This must cover writing Simple and structured control and conditional statements, simple and nested loop statements, single and multi-dimensional arrays, standard functions and recursive functions

Course Objectives:

Upon the completion of the course , the student will be able to :

1. To understand the steps of writing, saving, editing programs.
2. To understand of program compilation, linking and execution
3. Writing simple and advanced programs

Detailed Course Description:

Lab Number	Lab name	Lab content	Time Needed
1.	**Assignment, Input/Output Statements**		
2.	**Simple and Structured Control and Conditional Statements**		
3.	**Simple and Nested Loop Statements**		
4.	**Single and Multi-Dimensional Arrays**		
5.	**Standard Functions and Recursive Functions**		

Evaluation Strategies:

Exams		Percentage	Date
Exams	Med - term Exam	20%	--/--/----
	Practical experiments and assignments	30%	--/--/----
	Final Exam	50%	--/--/----

Teaching Methodology:
❖ Laboratory

Text Books & References:
Textbook:
1. Zak,Diane.2001. An Introduction to Programming with C++.Second Edition

References:
1. Deitel & Deitel .C++ How to Program, fourth edition, Prentice Hall, 2004.
2. Nell Dale. A Laboratory course in C++, Jones and Bartlett Publishers, fourth edition, 2004

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Electronic Engineering

Specialization	Computer Technology
Course Number	20404241
Course Title	Computer Networks
Credit Hours	3
Theoretical Hours	3
Practical Hours	0

Brief Course Description:

❖ Basics of data communication, analog and digital signals and its conversion computer network and it importance LAN and WAN networks, LAN topologies, and their features network devices, network protocols ,network software , internet basics

Course Objectives:

Upon the completion of the course , the student will be able to :

1. Define the hardware components of communication systems
2. List data communication protocols
3. Explain the layers of OSI model and the communication devices at each layer
4. List types of distributed systems
5. Distinguish between client –server and peer –to-peer networks
6. Utilize principle of systems analysis and design to plan a small network

Detailed Course Description:

Unit Number	Unit name	Unit Content	Time Needed
1.	**Introduction to data communication**	▪ Definition ▪ OSI model ,layers and functions ▪ Communication media (Coaxial ,twisted pair, fiber optic ,etc) ▪ Communication devices (NIC,HUBS, Routers, Multiplexers, etc) ▪ Media access control (either net ,CSMA/CD, token ring) ▪ Transmission (packet switching ,parity checks etc)	
2.	**Communication protocols and standards**	▪ Overview ▪ Examples and uses (IPX/SPX,TCP/IP, APPLE TALK,NETBIOS) ▪ Multiple layer networks	
3.	**Local area networks**	▪ Nodes ▪ Types of networks (Bus, Ring etc). ▪ Planning the Ethernet (thin and thick LAN) ▪ Layers used in LAN ▪ Internet and firewalls	
4.	**Wide Area Networks**	▪ Connecting LANs, point –to- point, multipoint ▪ Bridges, routers, gateways ▪ Domains	
5.	**The Internet**	▪ TCP/IP ▪ Nets/subnets ▪ domain name system (DNS) ▪ Internet routing protocols : http, ftp ,telnet, mail	
6.	**Distributed Networks**	▪ Distributed systems , centralized , hierarchical ▪ client –server (intranet) ▪ Peer –to- peer	
7.	**Building a Client – server network**	▪ Assessing the user needs ▪ designing the layered architecture, user interface layer ,business rules layer ,data base layer ▪ Determining the physical environment (hardware and software requirements)	

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Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	
Discussions and lecture Presentations			

Teaching Methodology:
❖ Lecture

Text Books & References:

Textbook:

1. Computer networks, By: Andrew Tanenbaum , prentice hall , 2002.

References:

1. Computer networks & internets, By: Douglas E. Comer , Ralph E. Droms Publisher :prentice hall , 2000
2. Computer Networking Essentials, 2001, by Debra Little John Shindwe

Electronic Engineering

Specialization	Computer Technology
Course Number	20404242
Course Title	Computer Networks Lab
Credit Hours	2
Theoretical Hours	0
Practical Hours	6

Brief Course Description:

❖ Laboratory works should cover all aspects of the course such as : Windows 2000 installation ,maintain server resources, managing groups , implementing group policy , managing disaster recovery, monitor server performance and safeguard data on a computer running Microsoft Windows Server 2000

Course Objectives:

Upon the completion of the course , the student will be able to :

1. Define the hardware components of communication systems.
2. Utilize principles of systems analysis and design to plan a small network.
3. Install a small network for sharing devices, files, and software using available software
4. Describe and use network capabilities of windows 2000

Detailed Course Description:

Lab Number	Lab name	Lab content	Time Needed
1.	**Introduction to Administrating Accounts and Resources**	▪ Introduction to managing a Microsoft windows 2000 environment ▪ Server installation ▪ Installing and configuring administrative tools ▪ Moving domain objects	
2.	**Managing User and Computer Accounts**	▪ Creating user accounts ▪ Creating computer accounts ▪ Modifying user and computer account properties ▪ Creating a user account template ▪ Enabling and unlocking user and computer accounts ▪ Resetting user and computer accounts ▪ Locating user and computer accounts in active directory ▪ Configuring user profiles	
3.	**Managing Groups**	▪ Creating groups ▪ Managing group membership ▪ Strategies for using groups ▪ Modifying groups ▪ Using default groups	
4.	**Managing Access to Resources**	▪ Managing access to shared folders ▪ Managing access to files and folders using NTFS permissions ▪ Determining effective permissions	

5.	**Implementing Printing**	▪ Installing and sharing printers ▪ Managing access to printers using shared printer permissions ▪ Managing printer drivers ▪ Implementing printer locations	
6.	**Managing Printing**	▪ Changing the location of the print spooler ▪ Setting printer priorities ▪ Scheduling printer availability ▪ Configuring a printing pool	
7.	**Implementing Group Policy**	▪ Introduction to group policy ▪ Implementing group policy objects ▪ Implementing GPO's on a domain ▪ Managing the deployment of group policy	
8.	**Managing the User Environment By Using Group Policy**	▪ Configuring group policy settings ▪ Configuring folder redirection ▪ Determining applied GPO's	
9.	**Managing Disks**	▪ Preparing disks ▪ Managing disk properties ▪ Managing mounted drives ▪ Converting disks ▪ Creating volumes ▪ Importing a disk	
10.	**Managing Disaster Recovery**	▪ Preparing for disaster recovery ▪ Backing up data ▪ Scheduling backup jobs ▪ Restoring data ▪ Configuring shadow copies ▪ Recovering from server failure ▪ Selecting disaster recovery methods	

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11.	**Implementing Administrative Templates and Audit Policy**	▪ Overview of security in windows server 2000 ▪ Using security templates to secure computers ▪ Testing computer security policy ▪ Configuring auditing ▪ Managing security logs	
12.	**Preparing to Monitor Server Performance**	▪ Introduction to monitoring server performance ▪ Performing real-time and logged monitoring ▪ Configuring and managing counter logs ▪ Configuring alerts	

Evaluation Strategies:

Exams		Percentage	Date
Exams	Midterm Exam	20%	--/--/----
	Practical experiments and assignments	30%	--/--/----
	Final Exam	50%	--/--/----

Teaching Methodology:
❖ laboratory

Text Books & References:
References:
1. Microsoft Windows 2000 Scripting Guide, by : Microsoft corporation ,2002
2. 2-MCSE: windows 2000 core requirements (study guide series), By: Chillis James ,2001

Electronic Engineering

Specialization	Computer Technology
Course Number	20404233
Course Title	Assessable Language
Credit Hours	3
Theoretical Hours	3
Practical Hours	0

Brief Course Description:

❖ Introduction to assembly language and microprocessor, data addressing, assembly language fundamentals, directives, data transfer instructions, arithmetic instructions, control transfer instructions, bit manipulation instructions, string instructions, procedures and macros, microprocessor control instructions, I/O programming and interrupts

Course Objectives:

Upon the completion of the course , the student will be able to :

1. Explain the Assembly language, Data representation and microprocessors registers.
2. Define and discuss memory addressing and addressing modes.
3. To understand Assembly language fundamentals and directives
4. Write simple programs using different Assembly language instructions

Detailed Course Description:

Unit Number	Unit name	Unit Content	Time Needed
1.	**Introduction to Assembly Language and Microprocessor**	▪ Machine language, assembly language and high level language ▪ Microprocessor architecture (block diagram, execution unit, bus interface unit, buses) ▪ Data representation (binary numbers, converting binary to decimal, hexadecimal numbers and signed numbers) ▪ Registers (data registers, segment registers, index and pointer registers, status and control registers)	

2.	**Data Addressing**	▪ Memory addressing.
		▪ Physical address
		▪ Addressing modes
		  - Register addressing
		  - Immediate addressing.
		  - Direct addressing.
		  - Register indirect addressing
		  - Direct indexed addressing
		  - Base relative addressing
		  - Base indexed addressing
		  - I/O port addressing	

3.	**Assembly Language Fundamentals**	▪ Constants and expressions. ▪ Statements (name, instruction mnemonic, operands, and a comment) ▪ Names (label, variable, keywords) ▪ Statement classes (instructions, directives) ▪ Operators (arithmetic operators,	

		logical operators, relational operators, value-returning operators)	
4.	**Directives**	▪ Data allocation directives (DB, DW, DD, DQ, =, equ, puplic, include, extern) ▪ Segment definition and procedure directives (segment, ends, assume, proc, endp) ▪ Control directives (end, org) ▪ Printing directives (title, page	
5.	**Data Transfer Instructions**	▪ General instructions (mov, push, pop, xchg, xlat) ▪ I/O instructions (in, out) ▪ Addresses transfer instructions (les, lds, lea) ▪ Flag transfer instructions (lahf, sahf, pushf, popf)	
6.	**Arithmetic Instructions**	▪ Addition instructions (add, adc, inc) ▪ Subtraction instructions (sub, sbb, cmp, neg, dec) ▪ Multiplication instructions (mul, imul) ▪ Division instructions (div, idiv) ▪ CWD and CBW instructions ▪ BCD arithmetic instructions (aaa, daa, aas, das,aam, aad)	
7.	**Control Transfer Instructions**	▪ Unconditional jump instructions (call, ret, jmp) ▪ Conditional jump instructions (jz,je, jne, jnz, ja, jb, jae, jbe, jc, jnc, jg, jl, jge, jle, jo, jno, js, jns, jpo jpe, jcxz) ▪ Loop instructions (loop, loope/loopz, loopne, loopnz)	

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8.	**Bit Manipulation Instructions**	- Logical instructions (test, not, or, and, xor). - Shift instructions (shr, sar, shl, sal) - Rotate instructions (ror, rcr, rol, rcl)	
9.	**String Instructions**	- Repeat string instructions (rep, repe/repz, repne/repnz) - Move string instructions (movs, movsb, movsw) - Compare string instructions (cmps, cmpsb, cmpsw) - Scan string instructions (scas, scasb, scasw) - Load string instructions (lods, lodsb, lodsw) - Store string instructions (stos, stosb, stows)	
10.	**Procedures and Macros**	- Procedure definition - Procedure calls and returns - Defining a macro - Use of parameters in macro - Local directive - Macro calling - Includes from a macro library - Comparison between macro and procedure	
11.	**Microprocessor Control Instructions**	- Flag control instructions (stc, clc, cmc, std, cld,sti,cli) - Esc, wait, and hlt instructions - Nop instruction	
12.	**I/O Programming and Interrupts**	- Interrupt definition - Interrupt instructions (int, into, iret) - Interrupt types (int 10h, int 21h) - Display programming. - Keyboard programming - Printer programming	

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Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	
Discussions and lecture Presentations			

Teaching Methodology:
❖ Lecture

Text Books & References:
Textbook:
1. Assembly Language for Intel-Based Computers. By : Kip R. Irvine-Prentice hall, 5th edition, 2006.

References:
1. IBM PC, Assembly Language and Programming. Peter Abel- Prentice hall, 5th edition, 2000

Electronic Engineering

Specialization	Computer Technology
Course Number	20404234
Course Title	Assembly Language Lab
Credit Hours	1
Theoretical Hours	0
Practical Hours	3

Brief Course Description:

❖ Lab in support of the Assembly language course .Each student must complete the assigned work in the lab time

Course Objectives:

Upon the completion of the course , the student will be able to :

1. To understand the steps of writing, saving, editing programs.
2. To understand of program execution
3. Writing simple and advanced programs using different Assembly language instructions

Detailed Course Description:

Lab Number	Lab name	Lab content	Time Needed
1.	8086 Addressing Modes		
2.	Data Transfer Instructions		
3.	Arithmetic Instructions		
4.	Logic Instructions		
5.	Program Control Instructions		
6.	String Instructions		
7.	Procedures and Macros		
8.	Interrupts		

Evaluation Strategies:

Exams		Percentage	Date
Exams	Met - term Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Discussions and lecture Presentations		30%	

Teaching Methodology:
 ❖ Laboratory

Text Books & References:

References:
1. Assembly Language for Intel-Based Computers. By : Kip R. Irvine-Prentice hall, 5th edition,2006
2. IBM PC, Assembly Language and Programming. Peter Abel- Prentice hall, 5th edition, 2000

Electronic Engineering

Specialty	Computer Technology
Course Number	20404251
Course Title	Digital System Maintenance Lab
Credit Hours	2
Theoretical Hours	0
Practical Hours	6

Brief Course Description:

❖ Lab activities must cover all topics of servicing, troubleshooting and repairing PCs, hardware problems and software problems and common used peripheral devices

Course Objectives:

Upon the completion of the course , the student will be able to :

1. To enable students how to disassembling Assembly of the PC.
2. Installing most of computer parts (RAM, HDD, FD, CD's).
3. To enable student how to install software.
4. Troubleshooting motherboard and its components
5. Troubleshooting software problems and viruses

Detailed Course Description:

lab Number	lab name	lab content	Time Needed
1.	**Disassembling/Assembling of the PC and specifying its parts.**		
2.	**Installing RAM, HDD (master/slave), FD, CDs**		
3.	**Testing Power Supply, motherboards and RAM sticks**		
4.	**Setting BIOS configurations**		
5.	**Installing Windows operating system**		
6.	**Working on Windows utilities programs for optimizing performance**		
7.	**Adding/Removing new hardware / software to the system**		
8.	**How to update windows using Windows update, Service packs, patches**		
9.	**Printer's maintenance and simple diagnosis**		

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Evaluation Strategies:

Exams		Percentage	Date
Exams	Med term Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Discussions and lecture Presentations		30%	

Teaching Methodology:

❖ Laboratory

Text Books & References:

References:

1. A+ Certification, Authors: Michael Meyers & Scott Jernigan, 2003 edition, ISBN: 0-07-222991-8

Web Design and Implementation Syllabus:

Course Description:

This course is designed to acquaint the student with Internet and Web design fundamentals. Study encompasses the development and structure of the Internet, Web page design and layout skills using HTML (the hypertext markup language), CSSs (Cascading Style Sheets) and JavaScript.

Learning Objectives

The student will gain knowledge of:

- Internet concepts
- Internet research
- Web page design and layout skills using HTML (the hypertext markup language), CSSs (Cascading Style Sheets) and JavaScript.

Course Schedule

Course Outline	Lectures
1. HTML ➢ Introduction to the WWW ➢ The What of the Web ➢ The What of HTML ➢ Tags and Attributes ➢ HTML Basic Tags ➢ The Body Tag and Its Attributes ➢ Heading Tags ➢ Paragraphs ➢ Line breaks ➢ Preformatted text ➢ Character Entities ➢ Adding Horizontal Lines ➢ Logical Formatting Elements ➢ Physical Formatting Elements ➢ The Font Element ➢ The Basefont Element ➢ Combining Basefont and Font Elements	19

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