NINJA CPA Review®

NINJA Notes

Business Environment & Concepts

January - July 2023

The 2023 BEC Exam

Source: AICPA

Content Area		Allocation
Area I	Enterprise Risk Management, Internal Controls, and Business Processes	20-30%
Area II	Economics	15-25%
Area III	Financial Management	10-20%
Area IV	Information Technology	15-25%
Area V	Operations Management	15-25%

Skill Levels	
Evaluation	The examination or assessment of problems, and use of judgment to draw conclusions.
Analysis	The examination and study of the interrelationships of separate areas in order to identify causes and find evidence to support inferences.
Application	The use or demonstration of knowledge, concepts or techniques.
Remembering and Understanding	The perception and comprehension of the significance of an area utilizing knowledge gained.

Table of Contents

The N.I.N.J.A. Framework

How to use NINJA Notes

Reading

You've invested in NINJA Monthly, now let the NINJA Notes go to battle for you. You should read them as many times as possible.

Carry it with you wherever you go.

Simply load the PDF onto your mobile device, and **if you have 5 minutes of downtime, you have 5 minutes of study time**.

It is recommended that you read the NINJA Notes at least **five times** leading up to your final two weeks of exam prep.

If you have 6 weeks to study, then you need to complete this in 4 weeks. 5 weeks to study, then complete it in 3.4 weeks = 2 weeks. You get the picture. The point is: plan, plan, plan and budget, budget, budget, budget because exam day is looming.

Learning Plans	
6-Week Plan	• Approx. 86 pages x 5 reads • 4 weeks • 7 days per week = Approx. 15 pages per day
5-Week Plan	• Approx. 86 pages x 5 reads • 3 weeks • 7 days per week = Approx. 20 pages per day
4-Week Plan	• Approx. 86 pages x 5 reads • 2 weeks • 7 days per week = Approx. 31 pages per day
3-Week Plan	• Approx. 86 pages x 5 reads • 1 week • 7 days per week = Approx. 61 pages per day

Rewriting The NINJA Notes

This step is optional, but it won over a lot of skeptics with its results. This is not mainstream advice. This is the NINJA way. The mainstream way of studying for the CPA Exam is old-fashioned and outdated.
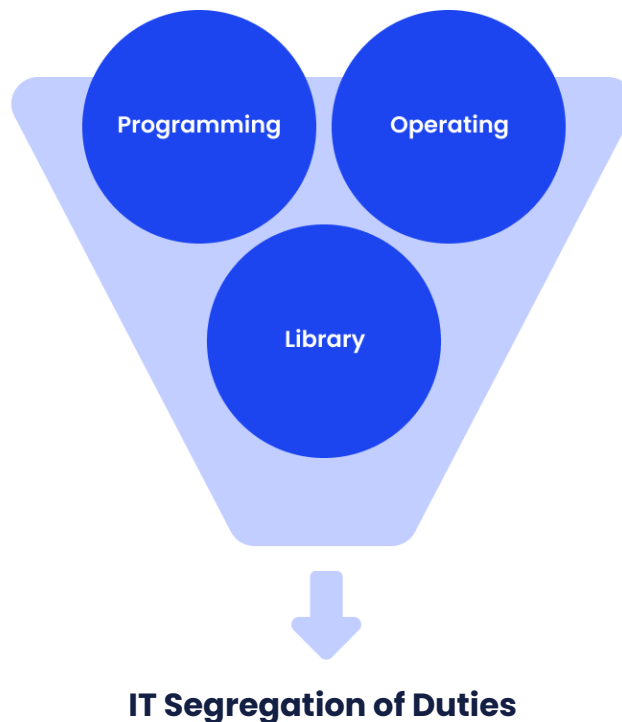
Forget the old way. **You are a NINJA now**.

Now is the time to either:

1. Rewrite your own CPA Exam notes or
2. Rewrite the NINJA Notes.

Plan on investing a week doing this, and you should expect to get through at least 20 pages a day to stay on track.

II. Information Technology

IT Segregation of Duties

- Segregated IT Roles

  - Operators (administrators), Programmers (engineers), & Librarians (custodians)

- Systems Analyst

  - Designs or purchases IT System

  - Responsible for Flowcharts

  - Liaison between Users and Programmers

- Systems Administrator

  - Controls Database Access

- Systems Programmer

- - Writes, Updates, Maintains, & Tests software, systems, and compilers

    - Control - Systems Programmer can't also have application programming duties

    - Control - Programmer can't be an Operator

  - Systems Operator

    - Schedules and Monitors Jobs

    - Runs IT Help Desk

    - Control - Operator can't be a Programmer

  - Compensating Controls

    - Use if duties can't be segregated

    - Include Computer Logs or two-factor authentication for audit trail

    - *Control Group* reviews logs

Management Information Systems (MIS)

- Used for decision-making

- Accounting Information System (AIS)

  - Type of MIS

  - Processes Transactions

- Executive Information System (EIS)

  - Specialized for Company Executive needs

  - Assists with Strategy Only

- ○ No Decision-Making Capabilities
- Expert System (ES)
  - ○ Computer uses reasoning
  - ○ Structured
  - ○ No human interpretation needed
- Decision Support System (DSS)
  - ○ Computer provides data
  - ○ Gives Interactive Support
  - ○ Human interpretation needed

AIS ⌄	• Processes Transactions
EIS ⌄	• Specialized • Strategy Only - No Decision Making
ES ⌄	• Structured • Computer Uses Reasoning • No Human Interpretation
DSS ⌄	• Computer Provides Data • Interactive Support • Requires Human Interpretation

Computing And Reports

- Ad Hoc
  - ○ User Initiates on Demand

- - - ■ Example: Query
  - Exception
    - Produced when Edit Tests, Check Digits, or Self-Checking Digits identify a problem
  - End-User Computing
    - User develops and executes own application

E-Commerce

- Benefits
  - Makes business transactions easier
- Risks
  - Compromised data or theft
  - Less paper trail for auditors
- Electronic Data Interchange (EDI)
  - Uses globally-accepted standards
  - Efficient

Networks

- File Server
  - Stores shared programs and documents
- Database
  - Located on File Server

- Allows users to share documents

- LAN (Local Area Network)

  - Connects computers in close proximity

- WAN (Wide Area Network)

  - Connects computers that are far apart

- VAN (Value-Added Network)

  - Privately-owned Network

  - Serves as 3rd Party Between 2 Companies

  - Routes EDI Transactions

  - Accepts a wide range of Protocols

  - Very Costly

Network Risk

- Firewall

  - Prevents unauthorized access to network

- Virus

  - Takes over a computer

  - Needs a host program to run

- Worm

  - Takes over multiple computers

  - Doesn't need a host program to run

Worm – **No host** needed	Virus – **Host** needed

Computer Hardware

- Automated Equipment Controls

  - Prevents and detects Hardware Errors

- RAM

  - Internal Memory

- CPU

  - Process Commands within computer

- Job Control Language

  - Schedules and allocates system resources

- Input Device Examples

  - Keyboard & Mouse

  - Scanner

  - Magnetic Ink Reader

  - Magnetic Tape Reader

  - EDI

  - Point of Sale Scanner

- Output Device Examples
    - Speakers & Monitor
- Gateway
    - Connects one network to another
    - Internet is connected by Gateways

Computer Hardware & Software Controls

- Parity Checks
    - Detects internal data errors
    - Bit added to each character; Checks to see if a bit was lost
- Echo Check
    - Transmitted data is returned to sender for verification (Think: Echoes back to you)
- Change Control
    - Authorizes program changes and approves program test results
- Security Software
    - Controls access to IT systems
    - Don't confuse this with anti-virus software
- Digital Signature
    - Confirms message has not been altered

Computer Types

- PDA / Smartphone / Tablet

- Microcomputer

    - PC / Laptop – Cost-effective

- Minicomputer

    - Like a Mainframe, but smaller

- Mainframe

    - Large computer with terminals attached

- Supercomputer

    - Very powerful and very big

Microcomputer   Minicomputer   Mainframe   Supercomputer

Computer Terms

- Bit

    - 1=ON

    - 0=OFF

- Byte

    - 8 Bits = 1 Character

- Field

- ○ Group of Related Characters

- ○ Ex: Zip Code

- Record

  - ○ Group of Related Fields

  - ○ Ex: Member Name/Address/City/State/Zip

- File

  - ○ Group of Related Records

  - ○ Ex: Membership Directory
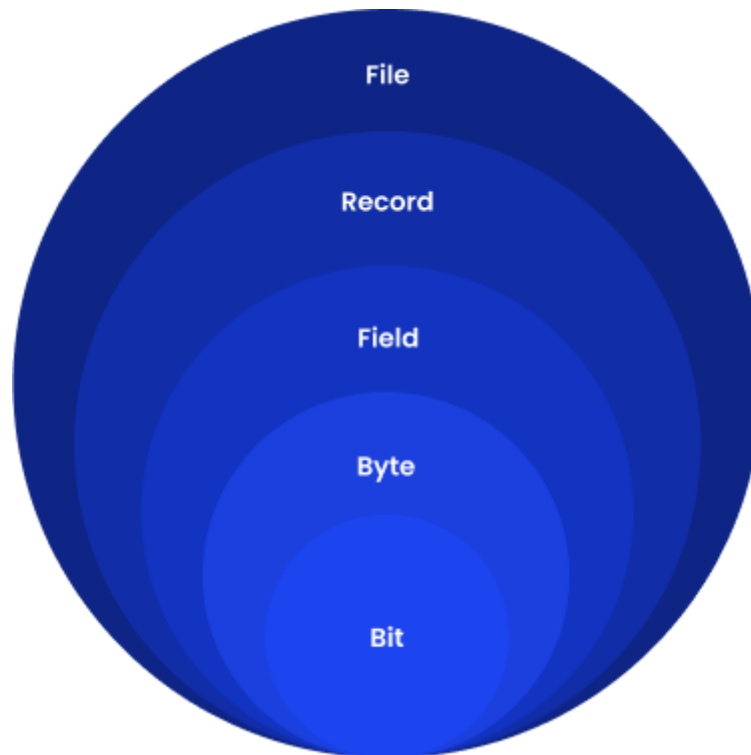
Computer Languages

- Design Engineers
    - Determine language used for a specific computer; C, C++, Java, Python, Ruby
- Source Programs
    - Written in English
- Object Programs
    - Language computers understand
- Compiler
    - Translator: Takes Source language (English) and converts to Object (Computer) Language

Source Program (English)

⬇

Compiler (Translator)

⬇

Object Program (Computer)
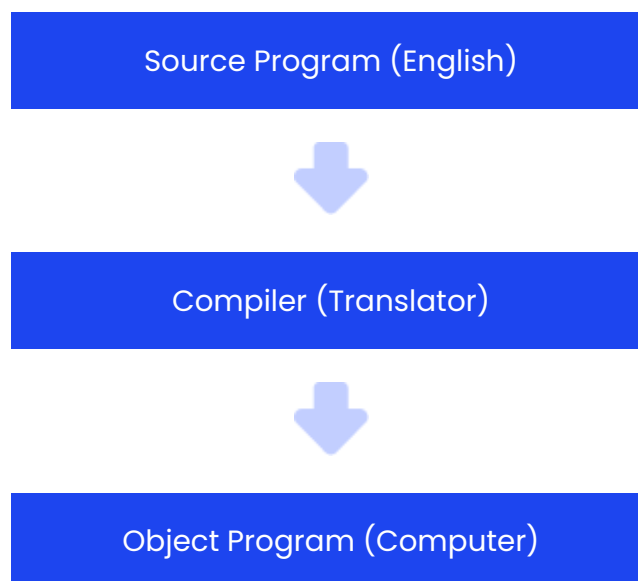
Computer Processing

- Online Analytical Processing

  - Uses a Data Warehouse to support management decision-making

  - Data Mining with a large volume of information

- Uses Artificial Intelligence and Pattern Recognition to analyze data stored in a Data Warehouse

- Online Transaction Processing

  - Processes a company's routine transactions

  - Real-time transactions with reporting capabilities

- Batch Processing

  - Update files all at once (e.g., 12 am payroll)

  - How scores are currently processed

  - Leaves a better audit trail

  - Uses Grandfather-Father-Son Back-up

    - 3 Levels of Back-up

    - Kept in 3 different locations

Online	• Instant (Real Time) • Processes Transactions as They Occur
Batch	• Held • Processed all at Once • Easier to Audit

Computer Output Controls

- Output Control

  - Was output data valid, distributed, and used in an authorized manner?

- Processing Control

  - Did data processing produce proper output?

Computer Input Controls

- Hash Total (Input Control)

  - Sum of Meaningless Numbers

  - Sum of Social Security Numbers

  - Tip: When encountering a question about a Hash Total on the exam, think, "Which answer, when added, would add up to non-sense?" i.e. adding up 10 peoples' social security numbers?

- Validity Check (Input Control)

  - Compares data to existing tables or files

  - Does a certain answer belong?

    - Ex: # in a Y/N blank

    - Ex: Is this person a customer?

- Limit Check (Input Control)

  - Can't surpass a certain limit

    - Ex: Age >110 in fill-in-blank

- Check Digit (Input Control)

- ○ Adds an identification number to a set of digits – usually at the end
- Field Check (Input Control)
  - ○ Prevents invalid characters
    - ■ Prevents alphabetic letters from being entered into an SSN# field

Disaster Recovery

- Hot Site – Alternate location takes over immediately
- Cold Site – Alternate location needs time to set up

Flowchart Symbols

- Alternate Process

- Connector

- Decision (Think D for Diamond)

- Document

- Manual Operation

- Process

- Terminator

Computer Databases

- SQL (Sequel) - Structured Query Language

  - Most common database language

Data Definition Language

- Defines Database
- Controls Tables

Data Manipulation Language

- Queries Tables

Data Control Language

- Controls Access

- Relational Database
    - Logical structure
    - Uses rows and columns similar to spreadsheet
    - CRUD: Create, Read, Update, Delete
- Hierarchical Database
    - Has various levels
    - Uses Trees to store data
- Database Advantages
    - Data more accessible
    - Reduced Redundancy
    - Easy to add and delete records
- Database Disadvantages

- Cost of installation

- Skilled personnel required to maintain (database admin)

- 3-Layer System

  - Desktop Client

  - Application Server

  - Database Server

  - Think: Your desktop computer runs applications and saves to a database

COBIT

- Globally-accepted set of IT best-practices for the Board, Executives, and Management

- Aligns the goals and objectives of the organization with IT

- Improves IT efficiency and cost-effectiveness

- Helps management to manage their IT investment

- Provides for a common language between IT and management

- Aids an organization with SOX compliance

It Terminology To Memorize In 2023

- Artificial Intelligence / Machine Learning

  - Technology that mimics human behavior

- Automation

- - Third Parties (Payroll, Banks) send client's data directly to the CPA
- Big Data / Data Analytics
  - Identifies Trends in Large Amounts of Data
    - Used for Predictions & Decision-Making
    - Used to Identify Fraud
    - Used to Identify patterns (e.g., healthcare transactions for patients)
- Data Visualizations
  - Puts Accounting data into a visual form
  - Charts, Graphs, Images
  - Makes Data Meaningful for Decision-Making
- Blockchain
  - Technology behind Bitcoin
  - Uses Distributed Ledgers
  - Think decentralization (vs centralization)
  - Captures accounting data in real-time
  - Advantage: Makes fraud harder
  - Disadvantage: Susceptible to price volatility and mostly available on the Internet
- Cryptocurrencies (Bitcoin)
  - Digital Asset / Currency (Think online gold)
  - Decentralized
  - Uses Cryptography

- - Difficult to Counterfeit but easy to replicate (Ethereum)
  - Bitcoin first Decentralized Cryptocurrency
    - Uses Blockchain
    - Each transaction is stand-alone
- Cloud Operations / Data Storage
  - Storage of Files/Data on Third-Party Servers over the Internet (vs Internal)
    - More Convenient
    - Cost-Effective
    - Risk of Hacking / Unauthorized Access
    - 3rd parties manage data and risk
    - Public and private clouds available
- Cyber-security
  - Security protocols to prevent Unauthorized Access to Computers, Files, or Documents
  - Firewalls, software and hardware related, could prevent hackers from breaking into an internal information system
- Digital Business Models
  - Leverage online and physical assets for competitive advantages in the marketplace

Data Analytics

- Big Data
  - Volume

- - - Quantity of Data

  - ○ Veracity
    - ■ Quality or Accuracy of Data

  - ○ Velocity
    - ■ Speed at which data is obtained

  - ○ Variety
    - ■ Type of data being dealt with

- Types of Analytics

  - ○ Descriptive Analytics

  - ○ Diagnostic Analytics

  - ○ Predictive Analytics

  - ○ Prescriptive Analytics

- Data Visualization

  - ○ Line Chart

  - ○ Bar Chart

  - ○ Pie Chart

  - ○ Histograms

  - ○ Scatterplot

- Tables