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# Introduction to Computing

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# Applications

**Business Applications**

**Modelling and Simulation**

Industrial and Control Applications

The Internet



# Business Applications

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- ❑ Financial Accounting Systems
- ❑ Booking Systems
- ❑ Management Applications



# Financial Accounting Systems

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- ❑ Sales ledger
- ❑ Purchase ledger
- ❑ Nominal ledger
- ❑ Stock control
- ❑ Invoicing
- ❑ Payroll



# Sales Ledger

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- ❑ Keep a record of amounts owed to a business by its trading customers or clients
- ❑ Customer information to be kept
  - Account number
  - Name and address
  - Credit limit
  - Balance



# Sales Ledger (2)

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- Transaction entries
  - Invoice
  - Credit note
  - Receipt
- For each transaction, the following information may be needed
  - Account number
  - Data of transaction
  - Amount of transaction
  - Transaction reference



# Sales Ledger (3)

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## □ Reporting

- Single account enquiry
- Customer statement printing
- Debtor age analysis
- Customer over credit limit
- Dormant account list



# Purchase Ledger

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- ❑ Keep a record of amounts owed by the business to its supplier
  - ❑ An account is created for each customer
  - ❑ Information about suppliers to be kept
    - Account number
    - Name and address
    - Credit limit
    - Settlement discount
    - Due date
    - Balance
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# Purchase Ledger (2)

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- Transactions
  - Supplier invoices
  - Approved payments
  - Adjustment
- Reports
  - Single account enquiries
  - Payment advice slip
  - Automatic cheques
  - Unpaid invoices
  - Creditors' age analysis



# Nominal Ledger

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- ❑ To record the income and expenditure of a business, classified according to purpose
- ❑ Information to be kept about nominal accounts
  - Account code
  - Account name
  - Balance



# Nominal Ledger (2)

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- Transactions
  - Sales and purchases
  - Other income and expenditure
- Reports
  - Trial balance
  - Transaction report
  - Trading and profit and loss account
  - Balance sheet



# Stock Control

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- For management of stock in inventory
- Information to be kept about stock
  - Stock code
  - Description
  - Analysis code
  - Unit size
  - Re-order level
  - Re-order quantity
  - Bin-reference



## Stock Control (2)

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- Information to be kept about stock
    - Minimum stock level
    - Cost price
    - Sale price
    - VAT code
    - Supplier code
    - Quantity issued
    - Stock allocated
    - Quantity in stock
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# Stock Control (3)

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- Transactions
  - Goods received
  - Goods returned
  - Goods issued
  - Stock allocated
  - Amendments



# Stock Control (4)

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- Reports
  - Stock enquiry
  - Stock out report
  - Re-order report
  - Stock list
  - Outstanding order report



# Invoicing

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- Information to be kept
  - Customer details
  - Stock details
  - Completed orders
  - Back orders
- Transactions
  - Sales order





# Invoicing (2)

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- Reports
  - Invoice
  - Back order report
  - Picking list
  - Sales data



# Payroll

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- ❑ To calculate salaries and wages for employees of large companies
- ❑ Information needed
  - Number of hours work
  - Amount of overtime
  - Bonus payment
  - Sickness leave
  - Type of employee
  - Deductions
  - Holidays
  - Tax code
  - Tax rate



# Booking Systems

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- ❑ Travel agents
- ❑ Hotel booking
- ❑ Library systems



# Travel agents

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- ☐ Book a tour
- ☐ Book an air ticket
- ☐ Book a train ticket
- ☐ Etc.



# Hotel Booking

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- For making room reservations
- Input information
  - Details of guests
  - Room preferences
  - Length of stay
  - Charge details



# Library Systems

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- For management of books within a library
- Common functions
  - Catalogue and classification
  - Circulation – managing borrowers
  - Enquiries
  - Acquisition – ordering of books
  - Reports
  - Periodicals – managing the ordering of magazines



# Management Applications

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- Management Information Systems (MIS)
  - Provide periodical reports to support managers to make decision
  - Key features
    - Provide summary information
    - Timing of information production is critical
    - Produce information to support decision making



# Management Applications

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- Decision support systems (DSS)
  - Provide more flexible tools to help decision-making
  - Narrower in scope than MIS
  - Problem specific
  - Input information for DSS is usually produced by MIS





# Modelling and Simulation

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- ❑ A model is a representation of a complex entity or process in a computer understandable format
- ❑ Modelling is the activity to produce such a model
- ❑ A simulation is a imitation of a complex process or system in real world



# Modelling and Simulation (2)

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- Reasons for using simulations
  - Testing
  - Safety
  - Prediction
  - Speed and flexibility



# Modelling and Simulation (3)

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- Applications
  - Marketing
  - Sociology
  - Psychology
  - Weather forecasting
  - Fluid mechanics
  - Engineering
  - Transport study
  - Etc.