CE 311 K
Introduction to Computer Methods

VB Controls and Events

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Introduction

• Program Planning and Flowcharts
• Visual Basic
• Visual basic Interface
• VB Controls
• Creating a Project
Why Visual Basic?

• #1 Reasons
  – Graphical User Interface (GUI) - easily constructed
  – More fun for students than other languages!

• The “other” reasons
  – General purpose, machine-independent language
  – Powerful and flexible language
  – Popular (used by many programmers, it’s been around since .... well MS DOS. Yeah, Bill Gates wrote it!)
  – Portable (works on all PC’s)
  – Small language (few components)
  – Modular (easily maintainable)

VB Programs

• Developing a VB Program
  – Design the GUI (buttons, text boxes, etc.)
  – Determine the events that the controls (buttons, etc.) will recognize
  – Write the procedures for those events

  What’s an EVENT? CLICK!

• Running a VB Program
  – VB monitors the controls in the window for events
  – When it detects an event, execute procedure for that event
  – Return to monitoring

  What’s a PROCEDURE?

  RUN? Is this a race?

• Sounds easy, but it can be frustrating!
**Flowcharting**

This can save your $^\&\%\$ when you lose track of what you're doing!

- **Flowchart**
  - Graphic representation of the sequence of steps in a process
- **Flowchart Symbols**
  - Start/Stop
  - Line
  - Input/Output
  - Processing
  - Decision

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**Example: Stamp Problem**

**Flowchart**

1. Start
2. Read sheets
3. Set stamps = sheets/5
4. Round stamps up to next whole #
5. Display stamps
6. End

**Pseudocode**

Program Purpose: Determine the proper number of stamps for a letter

- Read sheets
- Set the number of stamps to sheets/5
- Round the number of stamps up to the next whole number
- Display the number of stamps
Decisions

If condition is true, then
Process step(s) 1
Else
Process step(s) 2
End if

Average Grade Problem

BEGIN Average Grade
sum=0
count = 0
LOOP WHILE grade > 0
sum = sum + grade
count = count +1
END LOOP
average = sum/count
END Average Grade

Note: We can translate this pseudocode into any programming language.
Creating a New Project in VB

New Project Button

Windows Forms Application
To activate controls, select “Toolbox” and press “Push-Pin”.
A Little Visual Basic

• Controls
  – Picture boxes (pic)
  – Text boxes (txt)
  – Buttons (cmd)

Visual Basic Objects

• Useful Objects
  – List Boxes
  – Text Boxes
  – Picture Boxes
  – Labels
  – Buttons

• Useful Object Properties
  – Name
  – Caption
  – Border style
  – Visible
  – Back Color
  – Alignment
  – Font
Visual Basic Events

• When a VB program runs
  – A **Form** and some **Controls** appear on the screen
• Nothing happens until user takes an action
  – **Event**
• Most Events are associated with Controls
  – **Objects**
• Programmer writes **Code** to respond to events
  – **Procedures**

Boxes and Buttons

• VB: Object-oriented language
  – **Objects**: Controls
    • Text boxes, Picture boxes, Buttons, etc
  – **Procedures**: tasks that objects perform
    • Dot separates object name from method (TextBox1.TEXT)
    • Method: Assign text to a text box
Creating a Visual Basic Program

1. Identify Problem
2. Design Algorithm
3. Design GUI (interface)
4. Create Objects
5. Set Properties
6. Write Procedures for Events (button clicks, etc.)
7. Test Your Program

Homeworks

- Install
  - VB-2008
    - from the MS website or the CD at back of the book
- Do
  - Homework problems in VB
- Learn
  - How to create VB projects and solve problems
- Make
  - Screenshots and paste them into Word docs
- Use
  - Your computer
Summary

- Program Planning and Flowcharts
- Visual Basic
- Visual basic Interface
- VB Controls
- Creating a Project