### 48-749 Parametric Modeling Lecture 2b

Carnegie Mellon University School of Architecture

## Revit 2011 Basics

### Walls

### Modeling with Sketch based techniques

- using sweep and extrusion
- Doors, windows
- Floors, roofs
- Miscellaneous Functions

# Wall Types

### Basic Walls

- Exterior walls
- Generic walls
- Interior walls
- Foundation walls

### Curtain Walls

 predefined curtain walls or screen walls consisting of panels and mullions

### Stacked Walls

 Can define layers of walls for example "Brick over CMU with metal studs"

# Wall Types

Wall tool Choose Home tab > Wall from the menu bar or choose the Wall tool from the Design Bar



# Wall Properties

The Properties can be seen by clicking edit type

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# Wall Type Parameters

 To view and modify the type or instance parameters of a wall, change and Apply

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### Wall Instant parameters

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Base is Attached			
Base Extension Distance	0' 0"		
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Top Offset	0' 0"		
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Top Extension Distance	0' 0"	1	
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Structural Usage	Non-bearing		
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Properties help	Apply		

The Instance Parameters table in the Element Properties dialog box shows various parameters and their corresponding values the selected wall.

## Wall Assemblies

- Walls are comprised of layers of material
- it can be seen by Preview on in the Edit Assembly dialog box to view the graphical representation of the layers

e Properties	X	Edit Assembly
amily: System Family: Basi ype: Exterior - Brick on C	c Wall Coad	Family:     Basic Wall       Type:     Exterior - Brick on CMU       Total thickness:     1' 7 1/2''     Sample Height:     20' 0'
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Description		View Floor Plan: Modific br. V Preview >> DK Cancel Hei
Assembly Description	Ext. Wall - Brick Composite	
Assembly Code	B2010156	

### **Sketching Walls**



# Sketching using sweep(Model In-Place Component)



## Sketching using sweep Step 01\_Type of Component



### Sketching using sweep Step 02\_Use Sweep to create a solid mass



### Sketching using sweep Step 03\_Pick/draw the sweep path (plan view)

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### Sketching using sweep Step 04\_select view to draw the profile

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### Sketching using sweep

Step 06\_ Draw profile and Set up component parameters while in edit mode



### Sketching using sweep Step 06\_Add Component parameters



### Sketching using sweep Step 07\_Change Component parameter

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## Sketching using sweep Exercise 1.

- > Draw a path and profile using sweep.
- Add parameters: Height and angle



# Sketching using extrusion

Start with Component> Model in-place> Pick a family



# Sketching using extrusion

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# Sketching using extrusion

Draw the profile and set up parameters, if any



## Sketching using Blend Exercise 2

- Create an in-place component using blend.
- Use two different shapes to see the effects



# Splitting Walls

# Tools, Split







# Splitting Walls

# Openings



#### 🔽 Delete Inner Segment





# Importing and scaling images: Insert> Image





# Importing and scaling images

#### Modify> Scale



# Importing and scaling images



### Importing and scaling images Exercise 3

Import image from black board

Scale the image for drawing



### Doors and windows

 Doors and windows can be placed by choosing Door/Window from the Home Tab

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### Doors and windows

#### Doors and window types can be selected



# Door and window Properties



# Adding Doors and windows

Doors can be added to a building model in the plan, section, elevation or a 3D view, by clicking at the desired



Adding a door to an existing wall



An added door and its controls

# Additional Door and window types

#### Doors can be added by loading from Family

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### Floor

#### Floor has to be sketched based on lines, walls



### Floor



# Roof Types



# Roof Types



#### Specifying the sloping side





### Roof by Footprint



# Roof by Footprint (Flat)



# Roof by Footprint (Gable)



# Roof by Footprint (Hip)



# Roof by Footprint (Shed)

![](_page_41_Figure_1.jpeg)

## Adding Levels Exercise 4

- Create roof on a simple project
- Create an overhang of 3'

# Adding Levels

#### Home>Datum>Levels

![](_page_43_Figure_2.jpeg)

### Revit tips: Dimension tool (Equality Constraint)

![](_page_44_Figure_1.jpeg)

## Adding Levels Exercise 5

- Make levels visible in the sample project
- Add Levels to your project
- Add dimensions

# Editing (copy, move, others)

![](_page_46_Figure_1.jpeg)

# Revit tips: Copy 2 Clipboard & Paste Aligned-1

#### Modify→Clipboard→Copy

Clipboard Copy Clipboard Copy Clipboard Copies selected elements to the clipboard.	After clicking Copy, choose Paste Aligned
After copying elements to the clipboard, use the Paste tool or a Paste Aligned tool to paste the copied elements in the current view, a different view, or another project. Clipboard panel > Copy is different from Modify panel > Copy. Use Modify panel > Copy when you want to copy selected elements an place them immediately (for example, in the same view). Use Clipboard panel > Copy, for example, when you need to switch vie before placing the copied elements.	Hide → Paste Aligned → Paste Clipboard View Graphics
Press F1 for more help	Paste Aligned         Pastes multiple elements copied (or cut) from one level to another level exactly above or below the location of the original elements, or to a corresponding location.         You can use this tool to paste aligned elements in the following ways:         • From one level to many other levels of a multi-story building         • From a plan view to a callout view         • Between worksets or design options         • Between 2 files with shared coordinates

## Revit tips: Copy 2 Clipboard & Paste Aligned-2

![](_page_48_Figure_1.jpeg)

Choose various types of alignments from the dropdown menu. For instance, by choosing "select Levels" another window opens up with currently available levels to pick from

![](_page_48_Picture_3.jpeg)