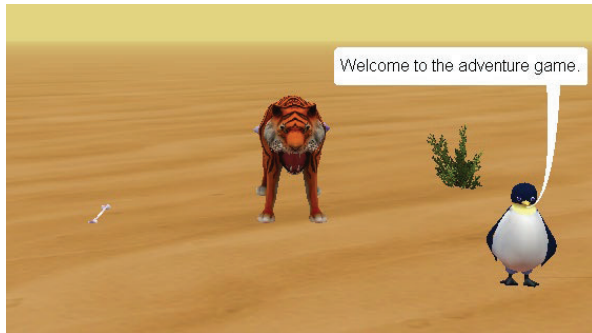


# CompSci 94

## Classwork: Build an Adventure Game

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CompSci 94 Fall 2021

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## How to build this world

- First read all the ideas, numbered 1
- Then follow the steps starting with step 2) on slide 7

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## 1) The Story

- This is an adventure game. The penguin is supposed to explore to find the treasure. You move the penguin around by clicking and dragging it. When close to an object the penguin can pick it up or the object will tell the penguin a task it has to do. The game is over when the penguin has the treasure. There are three scenes for the penguin to explore in. They will have different grounds (sand, grass and water).

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## 1) How will we do this?

- We will setup three scenes to move between
- We will use the right/left arrow keys to move between scenes
- We will have one penguin that will move between the scenes (use object markers to place where we want the penguin in each scene)
- Creatures will guard objects from the penguin. The penguin will have to bring them something specific before they will let the penguin take the object they are guarding.

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## 1) Picking up objects

- How do we keep the penguin from picking up objects until we want it to pick them up?
- The penguin can only pick up an object if it is not completely visible. Objects will have visibility 1.0. When it is ok to pick them up they will have visibility 0.9.

## 1) Don't use Camera Markers!

- Camera markers can freeze the setup scene so you can't click on objects.
- We will use invisible objects as camera markers, they won't freeze the screen.
- They work the same way as camera markers, you use "move and orient to" them to move the camera to another scene

## 1) Use the starter program?

- If you use the starter program, then the objects, scenes, objectMarkers and cameraMarkers are already setup. The procedures have been created as empty, and the events are missing.
- With the starter program you can skip steps 2-7, but read through them as this is what you will need to do for your final assignment.
- The starter program is on the class website under today's date

## 2) Setup the desert scene

- Open a new world with desert sand for the ground.
- Put in an AdelaideBust (this is the treasure)
- Put in a tiger in front of the AdelaideBust
- Put in a penguin, arm (looks like a bone, double its size) and a bush for decoration.
- See picture on next page for where to put objects
- For the penguin, drop an object marker and call it penguinMarkerDesert

## 2) Invisible Cat for Camera Marker

- Add in a cat and name it `cameraSceneDesert` and `moveAndOrient` the cat to the camera. Then make it invisible.



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## 3) To setup scenes

- To setup a new scene, you can just move the camera to the right or left.
- Do a one shot and **MOVE** the camera to the right 20 units.
- Now setup a scene that will be in the water. For now it is in the sand, but when the world plays it will be in the water. (see next slide)

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## 4) Scene 2 Water scene

- Add an island (push it down a little), a flamingo and a small mushroom.
- Move the penguin to the flamingo (to get it to this scene) and then setup the picture as below



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## 4) Scene 2 Water scene (cont)

- Drop an object marker for the penguin and call it `penguinMarkerWater`.
- When everything is setup, drag in a cat, name it `cameraSceneWater`, move and `orientTo` the camera, and make it invisible.



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## 5) Move Camera to Setup Scene 3

- Use a one shot to move and orient the camera to the cameraSceneDesert
- Then do another one shot to MOVE the camera to the LEFT 20 units.

## 6) Scene 3 Grass scene

- Add a wolf and a pumpkin (behind the wolf)
- Move the penguin to the wolf (to get it to this scene) and then setup the picture as below



## 6) Scene 3 Grass scene (cont)

- Drop an object marker for the penguin and call it penguinMarkerGrass.
- When everything is setup, drag in a cat, name it cameraSceneGrass, move and orientTo the camera, and make it invisible.



## 7) Move the camera and penguin back

- Now that all three scenes are setup, have the camera move and orient to the cameraSceneDesert
- Have the penguin move and orient to the penguinMarkerDesert.

## 8) Setup myFirstMethod

- Penguin should welcome user to the adventure game and tell them to find the treasure.
- Then ask if the user wants instructions. If yes, explain how to move between scenes (click right/left arrow key), explain to click and drag the penguin to objects and they will tell it what to do.
- Explain to get close to an object to pick it up.
- Finally, make the arm (bone) 0.9 visibility

## 9) Add in a black Billboard (or curtain)

- Add in a black billboard, bring it to the front and resize it large to cover the screen.
- Make the billboard invisible
- Glue it to the camera (set the billboard's vehicle property to the camera)

## 10) Write Scene Procedure ChangeSceneToWater

- Make the billboard visible
- Have the camera “Move and orient to” the cameraSceneWater, fast, duration 0
- Move the penguin to the object marker in the water scene, fast, duration 0
- Change the ground to water, fast duration 0
- Make the billboard invisible

## 10) Write two more Scene Procedures (cont)

- Write changeSceneToGrass to change the scene to the grass scene with the wolf
- Write changeSceneToDesert to change the scene to the desert scene

## 11) How to switch between scenes?

- Setup a keypress listener
- If the user presses right arrow and in the desert scene, call your procedure to change to the water scene
- If the user presses right arrow and in the grass scene, call your procedure to change to the desert scene.

## 11) How to switch between scenes? (cont)

- If the user presses left arrow and in the desert scene, call your procedure to change to the grass scene
- If the user presses left arrow and in the water scene, call your procedure to change to the desert scene.
- Any other left or right arrow key press does nothing.
- BE SURE TO NEST ALL OF THESE IF'S
- Also see hint next page

## 11) How do you know if the current scene is the desertScene?

- Since you setup camera markers (or rather invisible cats as camera markers), the Camera should be on top of the camera marker for that scene. Just ask if the camera is close to the camera marker.

```
declare procedure keyPressed [Event isLetter] [Event isDigit] [Event getKey] [Event isKey key: ???]
do in order
  if [BOTH [Event isKey RIGHT] AND [this.camera getDistanceTo [this.cameraSceneDesert] <= 2.0]
    [this changeSceneToWater]
  else
    if [BOTH [Event isKey RIGHT] AND [this.camera getDistanceTo [this.cameraSceneGrass] <= 2.0]
      [this changeSceneToDesert]
    else
```

## 11) Only one key press at a time

- Since you only want to press the arrow keys once, be sure to add more detail to set the multipleEventPolicy to IGNORE.
- Otherwise the arrow keys may be recognized more than once in one press.
- (See previous slide)

## 12) Play your world

- You should be able to use the right/left arrow keys to switch between scenes. The scenes will have different grounds (water, desert and grass)

## 13) Add an event to move penguin

- Add the mouse event:  
addModelDefaultManipulation
- We will use it to move the penguin around in the world

## 14) Write **Scene Procedure** PickUpItem

- Include a parameter of type Prop for the item to pick up
- If the item to pick up is not completely visible (that is it is less than 0.95) then
  - Make the item half its size
  - Move the item to the penguin's right wrist
  - Glue the item to the penguin

## 15) Add a collision event for the penguin to collide with items

- Items are: adelaideBust, pumpkin, arm, mushroom
- If the penguin collides with any of these, call pickup item with this item
- You likely will need a big IF. IF the item you collided with is the mushroom, call pickupItem with the mushroom
- Etc.

## 15) Special case for AdelaideBust (cont)

- If the penguin collides with the AdelaideBust, call pickupItem to pick it up, then have the penguin say “you got the treasure” and “game is over”

## 15) Run your world (cont)

- Pick up the bone (arm)
- That is the only object you can pick up right now.
- Make sure you turned the visibility of the bone to 0.95 in myFirstMethod or you will not be able to pick up the bone

## 16) Write Scene Procedure CheckItems

- The Purpose of this procedure is to see if the creature is ready to release the item they are guarding or if not, they will tell the penguin what they need in order to release the item.
- Add three parameters:
  - SjointedModel named creature
  - Prop named itemWants
  - Prop named itemBehind

## 16) Write Scene Proc. CheckItems (cont)

- If the penguin is holding the item the creature wants, (which means the creature is within 2 units of the item it wants) then
  - The creature says thank you for the item (name the item)
  - The item moves to the creature and disappears
  - The creature disappears. Move the creature down far out of the way
  - Change the opacity of the item behind the creature just a little so it can now be picked up.



## 16) Write Scene Proc. CheckItems (cont)

- If the penguin is NOT holding the item the creature wants
  - Move the penguin 3 units away from the creature
  - The creature tells the penguin to bring it the item it wants
- Be sure to use the three parameters!

## 17) Create a Collision Event for when the penguin collides with a creature

- Creatures to collide with: tiger, wolf, flamingo
- If the penguin collides with the tiger, call **checkItems** with the tiger
  - The tiger wants the mushroom
  - The adelaideBust is behind the tiger
- If the penguin collides with the wolf
  - The wolf wants the bone (arm)
  - The pumpkin is behind the wolf

## 17) Create a Collision Event for when the penguin collides with a creature(cont)

- If the penguin collides with the flamingo
  - The flamingo wants the pumpkin
  - The mushroom is behind the flamingo

## Now play the game!

