

Today we'll have a hands-on lab to further familiarize you with making movies, so **pairs of students** should get a laptop from the cart.

Download to the Desktop and extract the files needed for the lab from:

<http://www.cs.uni.edu/~fienup/cs1120s15/sessions/s29/lec29.zip>

Part A. In JES open the downloaded `lec29/rollingBall.py` program which is the rolling ball example from last class:

a) Complete the `if`-statement to create the `fileName` string as the `frameNumber` gets bigger. For testing, select the empty `ball` folder when setting the media path for storage of the `.jpg` files.

```
def main():
    """ Animation of a ball rolling down a 45-degree incline."""

    speed = requestInteger("Enter a speed for the animation 1 to 30")
    ballMovie = rollBall(speed)
    playMovie(ballMovie)

def rollBall(speed):
    directory = setMediaPath()
    frameNumber = 1
    for x in range (25, 375):
        nextFrame = makeEmptyPicture(400,400)
        addLine(nextFrame, 0,0, 399, 399, blue)
        addOval(nextFrame,x,x-25,25, 25, red)
        if x % 25 == 0:
            show(nextFrame)

        # save each pictures to a .jpg file
        if frameNumber < 10:
            fileName = "ball 00" + str(frameNumber) + ".jpg"
        elif

        writePictureTo(nextFrame, directory+"\\"+fileName)
        frameNumber += 1

    movie = makeMovieFromInitialFile(directory+"\\ball 001.jpg")
    return movie

main()
```

b) The ball moves too slowly. Fix your code to incorporate the `speed` parameter to speed-up the ball.

After you complete Part A, raise your hand and demonstrate your program.

Part B. In JES open the downloaded `lec29/ballOffEifelTower.py` program which throws a ball horizontally with a specified speed from the eifel tower. Input values of `startX = 210`, `startY = 70`, `xSpeed = 5`, and `ballWidth = 15`. You can use the initially empty `throwBall` folder to store the frames of the movie.

```
def main():
    """ Animation of a ball thrown horizontally with a specified speed."""
    print "Pick a picture to throw ball from (eifel.jpg) picture"
    pictureFile = pickAFile()
    picture = makePicture(pictureFile)
    # Good values for eifel.jpg picture are: startX = 210, startY = 70, xSpeed = 5, ballWidth = 15
    startX = requestIntegerInRange("Enter start x of ball", 0, getWidth(picture))
    startY = requestIntegerInRange("Enter start y of ball", 0, getHeight(picture))
    xSpeed = requestIntegerInRange("Enter x speed of ball", -50, 50)
    ballWidth = requestIntegerInRange("Enter the width of the ball", 0, 100)
    throwBallMovie = throwBall(picture, startX, startY, xSpeed, ballWidth)
    playMovie(throwBallMovie)

def throwBall(picture, startX, startY, xSpeed, ballWidth):
    print "Create new directory for movie frames"
    directory = setMediaPath()
    frameNumber = 1
    x = startX
    y = startY
    ySpeed = 1
    while y < getHeight(picture) - ballWidth:
        nextFrame = duplicatePicture(picture)
        addOvalFilled(nextFrame, x, y, ballWidth, ballWidth, red)
        if x % 25 == 0:
            show(nextFrame)
        # Build file name to save each pictures as a .jpg file
        if frameNumber < 10:
            fileName = "ball 00" + str(frameNumber) + ".jpg"
        elif frameNumber < 100:
            fileName = "ball 0" + str(frameNumber) + ".jpg"
        else:
            fileName = "ball " + str(frameNumber) + ".jpg"
        writePictureTo(nextFrame, directory+"\\ "+fileName)
        frameNumber += 1
        x = x + xSpeed
        y = y + ySpeed
        ySpeed = ySpeed + 5

    movie = makeMovieFromInitialFile(directory+"\\ball 001.jpg")
    return movie

main()
```

a) The above code uses a `while`-loop which continues to loop while the comparison is `True`. Explain the above `while`-loop comparison.

b) What is the purpose of the `ySpeed = ySpeed + 5` assignment statement?

c) Why could a `for`-loop NOT be used instead of the `while`-loop in the above code?

After you complete Part B, raise your hand and explain your answers.