PROBLEM 5-1 (10/10 points)

You are taking a class that plans to assign final grades based on two midterm quizzes and a final exam. The final grade will be based on 25% for each midterm, and 50% for the final. You are told that the grades on the exams were each uniformly distributed integers:

- Midterm 1: 50 <= grade <= 80
- Midterm 2: 60 <= grade <= 90
- Final Exam: 55 <= grade <= 95

Write a function called `sampleQuizzes()` that implements a Monte Carlo simulation that estimates the probability of a student having a final score >= 70 and <= 75. Assume that 10,000 trials are sufficient to provide an accurate answer.

Note: Do not include any "import" statements in your code. We import the random module for you, and you should not be using any functions from the Pylab module for this problem.

Note: Do not put any "print" statements in your code. Your function should only return the answer.

```
def sampleQuizzes():
    score = 0.0
    for i in range(10000):
        midTerm1 = random.randrange(50,81)
        midTerm2 = random.randrange(60,91)
        finalExam = random.randrange(55,96)
        grade = midTerm1*0.25 + midTerm2*0.25 + finalExam*0.50
        if grade >= 70 and grade <= 75:
            score += 1.0

    return score/10000
```

Correct

Test results

See full output

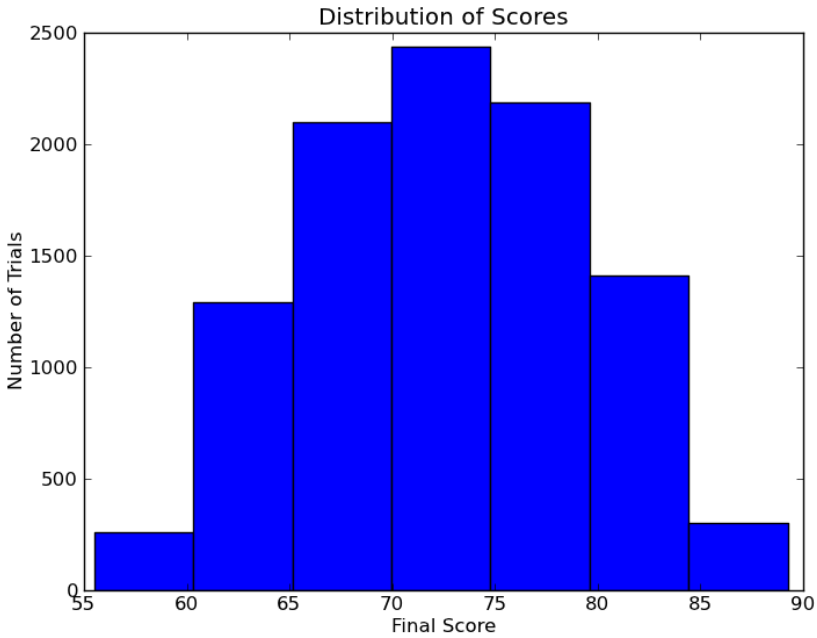
CORRECT

See full output

Check | Save | *You have used 1 of 10 submissions*

PROBLEM 5-2 (10/10 points)

Write a procedure called `plotQuizzes()` that produces a plot of the distribution of final scores for all of the trials. Try your best to match exactly how the histogram below looks (including the bins, titles and labels on the axes). Click the image to see a larger version.



Your code should make a call to the function `generateScores`, which is defined according to the following docstring:

```
def generateScores(numTrials):
    """
    Runs numTrials trials of score-generation for each of
    three exams (Midterm 1, Midterm 2, and Final Exam).
    Generates uniformly distributed scores for each of
    the three exams, then calculates the final score and
    appends it to a list of scores.

    Returns: A list of numTrials scores.
    """
```

You should use the same number of trials as you did in Problem 5-1.

Note: The grader uses a very minimal version of the Pylab module. Please only use the following Pylab functions: show, plot, title, xlabel, ylabel, legend, figure, and hist.

Note: Do not put any "print" statements in your code!

```
def plotQuizzes():
    scores = generateScores(10000)
    pylab.hist(scores,bins = 7)
    pylab.title('Distribution of Scores')
    pylab.xlabel('Final Score')
    pylab.ylabel('Number of Trials')
    pylab.show()
```

Correct

Test results

See full output

CORRECT

See full output

Check Save *You have used 1 of 10 submissions*