

E370 – Fall 2009 Lab Exam I (Version 1)

Statement of Academic Integrity:

"I swear that I have neither given nor received assistance on this exam and that I will not discuss this exam until all sections have completed it, that is until 13:30 hours on Friday, October 16, 2009."

I have read and agree with the above statement.

Signature: _____

Name: (please print) _____

Team Number _____

Instructions

- 1. Before you begin the exam, write your name on every page of your exam.**
2. Answer the questions in the spaces provided on the exam.
3. You will have exactly 50 minutes to complete this exam.
4. The value of each question is given by each question. **Budget your time accordingly.**
5. **Absolutely ALL cell phones must be turned off and out of reach.**
6. **Include 2 decimal places** in your answer where applicable, but do **not** round any calculations **until the final answer.**
7. For any question that does not use an Excel command, you must show your work and explanation to receive full credit. This means we must see what your thought process was as you solved the problem. Don't write volumes; just show your work.
8. You may use EXCEL and the Orange tool cards of lab manual for this exam. No other calculators or electronic devices of any kind may be on your desk.
9. Only the exam, pencils, erasers, and the tool cards may be on your desk. Put all the rest of your belongings along the wall or at the front of the room.
10. Remember, a student is to avoid even the appearance of cheating. Keep your eyes on your exam or on your computer screen. Any questionable behavior on your part is sufficient reason for your coach to confiscate your exam and ask you to leave the room.
11. You may only leave your seat to leave the room. Once you leave your seat, you must turn in your exam.
12. When you are finished, you may turn in all pages of the exam and leave the room as soon as you are able to without disturbing your classmates.
13. Stay calm and do your best.

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1) Use the Excel sheet labeled “fish_ver1_white” to answer the following questions. This dataset presents a random sample of fish caught in Hosu Lake. In the sheet, values for “SPECIES”, “LENGTH” and “WEIGHT” are recorded for 157 fish of 7 species. Read the data description in the Excel sheet carefully. **(23 pts. plus Extra credit 5 pts.)**

A) When you describe the central tendency of “SPECIES”, () is the most desirable measure because “SPECIES” is a(n) () variable. The value which the measure takes is (). **(5 pts)**

B) Determine the shape of the distribution for the variable “WEIGHT”. Provide numerical justification. **(5 pts.)**

Numerical value(s):

Conclusion:

C) Between “WEIGHT” and “LENGTH”, which variable is relatively more homogeneous? Provide numerical justification. **(5 pts.)**

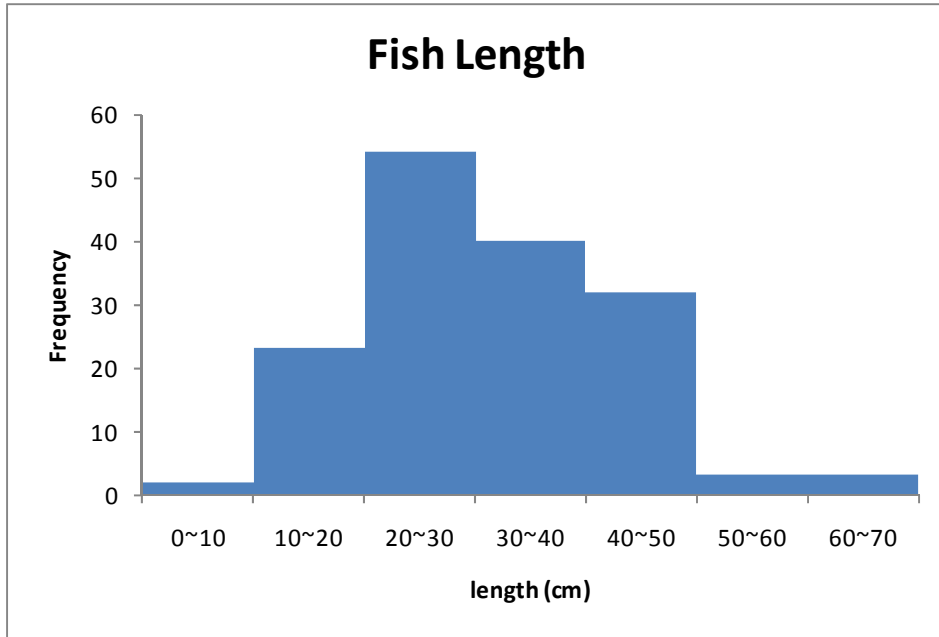
() of “WEIGHT” =

() of “LENGTH” =

Conclusion: () is relatively more homogeneous.

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D) The histogram below is plotted using the variable "LENGTH". Now plot another histogram for the same variable "LENGTH". Use the same lower limit of the first class, which is zero, however, make the class interval 5. (1) Report the frequency values for 5th, 6th, 7th, and 8th classes. (2) Describe the major difference in the two plots, paying particular attention to revealed characteristics of the distribution. **(8 pts.)** Explain why the data would have the distribution you see in the graph which you plotted. **(Extra credit 5 pts.)**



(1) Frequency values (4 pts.):

5th class frequency value: () 6th class frequency value: ()

7th class frequency value: () 8th class frequency value: ()

(2) Major difference (4pts.):

Extra credit:

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2) Use the Excel sheet labeled “**software_ver1_white**” to answer the following questions. This data presents a random sample of software projects completed by DaumAgora Inc . In the sheet, values for “**TEAM**”, “**WORKHOUR**”, “**FP**” and “**VC**” are recorded for 104 projects. Read the data description carefully. **(17 points)**

A) Among “**TEAM**”, “**WORKHOUR**” and “**FP**”, which has the strongest linear relationship with “**VC**”? Provide Numerical justification. **(6 pts.)**

Numerical values:

Conclusion: () has the strongest linear relationship with “**VC**”

B) If the Chief Technology Officer is interested in predicting **variable costs (“VC”)** of a certain software development project given **function points (“FP”)**, what do you suggest he/she do? (1) Report the numerical values of your estimation. (2) If a specific project has 10,000 function points, what is your prediction of the variable cost? **(11 pts.)**

(1) Estimation result (6 pts.):

(2) Prediction (5 pts.):

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3) A student is taking a multiple-choice quiz in which each question has five choices. Suppose that she has no clue of the correct answers to any of the questions, and thus decides on a strategy in which she will place five balls (marked A, B, C, D and E) into a box. She randomly selects one ball for each question and puts the ball back in the box. The marking on the ball selected will determine her answer to the question. **(20 pts)**

A) If there are 10 questions of five options in the exam, what is the probability that she will get:

(1) five questions correct? **(3 pts.)**

Excel Formula:

Answer:

(2) at least four questions correct? **(3 pts.)**

Excel Formula:

Answer:

(3) no more than two questions correct? **(3 pts.)**

Excel Formula:

Answer:

(4) more than four but less than eight questions correct? **(3 pts.)**

Excel Formula:

Answer:

B) Describe briefly two assumptions necessary to use the above distribution? **(2 pts.)**

C) What are the mean and the standard deviation of the number of questions that she will get correct? **(6 pts.)**

(1) Mean (3 pts.):

(2) Standard deviation (3 pts.):

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4) You have sample data for four stocks on the Excel sheet labeled “**stock_ver1_white.**” Answer the following questions. **(15 pts.)**

A) Estimate the expected returns and variances for the following simple portfolios. **(10 pts.)**

Portfolio A: Stock 1 - 40%, Stock 2 - 60%,

Portfolio B: Stock 3 - 30%, Stock 4 - 70%.

	Portfolio A	Portfolio B
Expected Return		
Variance		

Note: Include at least 4 decimal places when you write down your final answers.

B) If the objective of the investors is to maximize their expected return (profitability), then which portfolio would you recommend? **(2 pts.)**

C) If the objective of the investors is to minimize their expected risks (variance), then which portfolio would you recommend? **(3 pts.)**

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Only for the use of graders

	Full points	Points earned
1) A)	5	
B)	5	
C)	5	
D)	13	
2) A)	6	
B)	11	
3) A)	12	
B)	2	
C)	6	
4) A)	10	
B)	2	
C)	3	
Total	80	