Name: ____________________________________________
Net ID ________________

There are 2 sections. Each section is worth 50 points, for a total of 100.
It is essential that you **PUT YOUR NAME AND NET ID ON THIS TEST**. If any pages are separated from your test, please also put your name on these pages as well. It can be difficult to identify the author of an unsigned test and it would be better to avoid this problem.

You should have 2 packets relating to the test. This booklet contains:

1. Section 1 questions with boxes to fill in your answers
2. Additional pages for answering Section 2 questions.

**It is important that you do not remove any pages from this section.**

The other booklet contains:

1. Section 2 questions
2. A GLOSSARY OF TERMS – Please feel free to look up some of the basics in this glossary. I will also answer any reasonable look-up style questions as I am more interested in your ability to reason than your ability to memorize.

**Section 1: (50 points)** Each example consists of Python code, followed by questions and places to fill in answers. Please read all questions carefully and answer them as precisely as possible. For each problem, there is one or more box for the answer. Additional boxes are provided. If you change your mind about an answer, cross out the previous answer and put your corrected answer in the new box. Please make notes and do calculations on the backs of pages.
Assume that there are no bugs in the code that will make the system crash, although the code may not solve a problem perfectly. If you find anything that you think is a bug, there is either a typo (and I should fix it for everyone) or you are mistaken.

**Sample Question A:**

```python
output = '1'+'1'
```

Question: What is the value of the variable `output`?

Answer: `'11'`  

Note: Attention to detail is important. The quotes indicate that it is a string. Partial credit is possible. For example, leaving out the quotes would have resulted in a small deduction, but answering 2, would have resulted in an incorrect answer.
Question 1

def make_box_around(word):
    line = ''
    for letter in word:
        line = line + '-'
    boxed_word = '' + line + '
' + '|' + word + '|' + '
' + ' ' + line
    return(boxed_word)

print(make_box_around('Fox'))

Question 1a: While running the code above, what is returned by the function make_box_around?

Answer: 

Question 1b: What prints out after that code executes?

Answer: 

Question 2: What prints out after the following code executes (use the answer boxes below the code)?

def two_digits(number):
    if number < 10:
        return('0'+str(number))
    else:
        return(number)

def what_time(hours,minutes,is_pm,more_hours,more_minutes):
    ## time of day --> hours, minutes, is_pm
    ## example 1:30 AM --> hours = 1, minutes = 30, is_pm = False
    ## Time in future in hours (more_hours) and minutes (more_minutes)
    ## example 5 hours and 30 minutes --> more_hours = 5, more_minutes = 30
    total_minutes = minutes + (60 * hours) ## combine hours and minutes
    if is_pm:
        total_minutes = total_minutes + (60 * 12) ## if pm time, add 12 more hours
    total_minutes = total_minutes + more_minutes ## add new minutes
    total_minutes = total_minutes + (more_hours * 60) ## add new hours
    minutes_in_day = 60 * 24
    left_over_minutes = total_minutes % minutes_in_day
    new_hours = left_over_minutes//60
    new_minutes = left_over_minutes%60
    if new_hours >=12:
        new_is_pm = True
        new_hours = new_hours-12
    else:
        new_is_pm = False
    if (new_hours == 0) and new_minutes == 0:
        print_string = 'It is now midnight'
    elif (new_hours == 12) and new_minutes == 0:
        print_string = 'It is noon'
    else:
        print_string = ('It is '+str(new_hours)+':'+two_digits(new_minutes))
        if new_is_pm:
            print_string = print_string+' PM'
        else:
            print_string = print_string+' AM'
    print(print_string)

current_hour = 11
current_minutes = 30
current_is_pm = False
add_hours = 500
add_minutes = 30
what_time(current_hour,current_minutes,current_is_pm,add_hours,add_minutes)

Answer: 3
def stick_dog():
    print((' ' * 5) + '/\\/\' + (' ' * 7) + ' / ')
    print(('_' * 4) + '/Q Q |' + ('_' * 5) + ' / ')
    print(('-' * 4) + ('_-' * 10) + ' ')
    print((' ' * 4) + '/\' + (' ' * 7) + '/\')
    print((' ' * 3) + '/' + (' ' * 2) + '\' + (' ' * 5) + '/' + (' ' * 2) + '\')

stick_dog()

1st 20 X 5 Grid

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2nd 20 X 5 Grid

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Question 4: Given the following set of code, answer questions 4a, 4b and 4c.

```python
def yes_or_no():
    answer = 'Blah'
    while (not (answer[0] in 'yn')):
        answer = input('Yes or No? ')
        answer = answer.lower()
        if (not (answer[0] in 'yn')):
            print('Invalid Answer')
        if answer[0] == 'y':
            return(True)
        else:
            return(False)

def whoAreYou():
    color = input('What color is your face? ')
    color = color.lower()
    print('Do you sing very often?')
    singing = yes_or_no()
    print('Do you have big hands or paws?')
    big_hands_or_paws = yes_or_no()
    print('Are you a primate? ')
    primate = yes_or_no()
    if color == 'orange':
        if primate:
            if big_hands_or_paws:
                print('You are an Orangutan.')
            elif singing:
                print('You are an oompa loompa.')
            else:
                print('You are Donald Trump.')
        elif big_hands_or_paws:
            print('You are a tiger.')
        else:
            print('You are a goldfish.')
    elif color == 'yellow':
        if big_hands_or_paws:
            print('You are Homer Simpson.')
        else:
            print('You are Tweety Bird.')
    elif color == 'green':
        if primate:
            if big_hands_or_paws:
                print('You are the Jolly Green Giant.')
            else:
                print('You are the Wicked Witch of the West.')
        elif singing:
            print('You are Kermit the Frog.')
        else:
            print('You are Yoda.')
    else:
        print('You are an unidentified',color,'creature.')
```

Question 4a: What prints out if the answers to the 4 questions (in the order asked) are: green, yes, yes, and yes?

Answer: 

Question 4b: What prints out if the answers to the 4 questions (in the order asked) are: orange, no, no, and yes?

Answer: 

Answer:
Question 4c: What prints out if the answers to the 4 questions (in the order asked) are: blue, no, no, and yes?
Section 2 (50 points): Answer exactly 2 out of the 3 questions provided in the Section 2 booklet. For each question, write a Python program as specified. Cross out any code that you do not want counted. If you do 3 questions, cross out the question that you do not want to be counted.

Question __________