## Part 1: Write Python code to do the following:

1. Create a program that asks the user to enter their name and their age. Print out a message addressed to them that tells them the year that they will turn 100 years old.

```
name = input("What is your name: ")
age = int(input("How old are you: "))
year = str((2014 - age)+100)
print(name + " will be 100 years old in the year " + year)
```

2. Ask the user for a number. Depending on whether the number is even or odd, print out an appropriate message to the user. Hint: how does an even / odd number react differently when divided by 2?

```
num = input("Enter a number: ")
mod = num % 2
if mod > 0:
    print("You picked an odd number.")
else:
    print("You picked an even number.")
```

3. Take a list, say for example this one, a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]
and write a program that prints out all the elements of the list that are less than 5.

```
a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]

num = int(raw_input("Choose a number: "))

new_list = []

for i in a:
        if i < num:
                new_list.append(i)

print new_list
```

4. Take two lists, say for example these two:

 a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]
 b = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]

Write a program that returns a list that contains only the elements that are common between the lists (without duplicates). Make sure your program works on two lists of different sizes.

```
a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]
```

```
b = [1, 2, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]

mylist = []

for element in a :

   if element in b :

      if element not in mylist:

         mylist.append(element)

print(mylist)
```

5. Make a two-player Rock-Paper-Scissors game. (Hint: Ask for player plays (using input), compare them, print out a message of congratulations to the winner, and ask if the players want to start a new game)

```
import sys

user1 = input("What's your name?")
user2 = input("And your name?")
user1_answer = input("%s, do you want to choose rock, paper or scissors?" %
user1)
user2_answer = input("%s, do you want to choose rock, paper or scissors?" %
user2)

def compare(u1, u2):
    if u1 == u2:
        return("It's a tie!")
    elif u1 == 'rock':
        if u2 == 'scissors':
            return("Rock wins!")
        else:
            return("Paper wins!")
    elif u1 == 'scissors':
        if u2 == 'paper':
            return("Scissors win!")
        else:
            return("Rock wins!")
    elif u1 == 'paper':
        if u2 == 'rock':
            return("Paper wins!")
        else:
            return("Scissors win!")
    else:
        return("Invalid input! You have not entered rock, paper or scissors,
try again.")
        sys.exit()

print(compare(user1_answer, user2_answer))
```

6. Write a program (using a function) that asks the user for a long string containing multiple words. Print back to the user the same string, except with the words in backwards order. For example, say I type the string: My name is Barbara. Then I would see the string: "Barbara is name My," shown back to me.

```python
def reverse(x):
    y = x.split()
    return " ".join(reversed(y))

test1 = raw_input("Enter a sentence: ")

print reverse(test1)
```

7. Implement a function that takes as input three variables and returns the largest of the three. The goal of this exercise is to think about some internals that Python normally takes care of for us. All you need is some variables and if statements!

```python
def max_of_three(a,b,c):
    max_3=0
    if a>b:
        #max_3=a
        if a>c:
            max_3=c
        else:
            max_3=a
    else:
        if b>c:
            max_3=b
        else:
            max_3=c
    return max_3

max_of_three(12,55,66)
```

**Part 2: Write JavaScript code to do the following.**

1. Alert "Hello world."

```javascript
alert("Hello world");
```

2. Read a number (using prompt) and display it using alert.

```javascript
var n = prompt ("Please enter a number.");
    alert("Your number is "+ n);
```

3. Read two numbers and display their product.

```javascript
var n1 = prompt("Please enter a number.");
var n2 = prompt("Please enter another number.");
alert ("The product of "+n1+" and "+n2+" is "+ n1*n2);
```

4. Read in two numbers and display the larger.

```
var n1 = 1*prompt("Please enter a number.");
var n2 = 1*prompt("Please enter another number.");
if (n1 > n2)
      alert(n1+" is the larger.");
else
      alert(n2+" is the larger.");
```

5. Use a loop to display the numbers 0 through 5, each in a separate alert window.

```
for (var i=0; i<=5; i++)
        { alert(i); }
```

6. Use a loop to display the numbers 0 through 5 in a single alert window.

```
var s="";   // Create empty string.
    for (var i=0; i<=5; i++)
    {
    s=s+i+""; //Add next integer plus a space.
}

alert(s);
```

7. Prompt the user for a number in the range 0...100. If the number is out of range, display an error message and prompt again until a valid number is entered. Assume the user enters a number each time.

```
var n = prompt("Please enter a number in the range 0...100");
while (n<0 || n>100)
{
  alert(n +" is out of range.   Try again.");
  n = prompt("Please enter a number in the range 0...100");
}
```

8. Repeat previous exercise, but this time allow for the possibility that the user enters something that is not a number. Hint: the built-in function isNaN(x) returns **true** if x is not a number. It returns **false** if x is a number.

```
var n = prompt("Please enter a number in the range 0...100");
        while (isNaN(n) || n<0 || n>100)
        {
                alert(n +" is out of range or not a number. Try again.");
                n = prompt("Please enter a number in the range 0...100");
        }
```

9. Prompt for an integer, then display the sum of the integers from 0 through the number entered. For example, if you enter 10, then display 55 which is the sum of 0+1+2+3+4+5+6+7+8+9+10.

```
var max = 1*prompt ("Please enter an integer.");
```

```
                var sum = 0;
                for (var i=0; i<=max; i++)
                    sum = sum + i; // Add i to the running sum.
                    alert("The sum of 0 through "+max+" is "+sum);
```

10. Prompt for an integer, then display the average of the integers from 0 through the number entered. For example, if you enter 10, then display 5 which is the average of (0+1+2+3+4+5+6+7+8+9+10)/11.

```
                var max = 1*prompt ("Please enter an integer.");
                var sum = 0;
                for (var i=0; i<=max; i++)
                     sum = sum + i; // Add i to the running sum.
                alert("The average of 0 through "+max+" is "+(sum/(max+1)));
```

11. Write the function isValid(n) that returns true if n is a number 0...100.

```
             function isValid(n)
          {  if (isNaN(n)) return false; // Not a number.
             return n>=0 && n<=100;       // Range test.
           }
```

12. Write the function isInteger(n) that returns true if n is an integer 0...100. Hint: use isValid from the previous question.

```
        function isInteger(n)
            {    if (!isValid(n)) return false // Not a number or out of range.
                // If we get to this point, n must be a number in range.
               return (Math.floor(n)==n)     // Integer test.
             }
```

**Part 3: Write HTML and CSS code to do the following:**

1. Someone messed up this webpage! Paste the HTML code below into a new HTML page and fix the errors. Finished page should look like this:

# Greatest Tabloid Headlines

**FORD TO CITY: DROP DEAD** (*Daily News*, 1975)

**KISS YOUR ASTEROID GOODBYE!** (Meteor misses earth; *Post*, 1998)

SOMOZA SLAIN BY BAZOOKA (*News*, 1980)

[HEADLESS BODY IN TOPLESS BAR](#) (*New York Post, 1982*)

[*'I AM DEATH WISH VIGILANTE' (Bernie Goetz turns himself in;* **Post***, 1985)*](#)

```html
<html>

    <head>

        <title>Greatest Tabloid Headlines</title>

    </head>

    <body>

                <h2>Greatest Tabloid Headlines</h2>

                <p>

                <strong>FORD TO CITY: DROP DEAD</strong> (<em>Daily News</em>, 1975)

                </p>

                <p>

<strong>KISS YOUR ASTEROID GOODBYE!</strong> (Meteor misses earth; <em>Post</em>,
1998)

                </p>

                <p>

<sstrong>SOMOZA SLAIN BY BAZOOKA</strong> (<em>News</em>, 1980)

                </p>

                <p>

<strong><a href="www.capitalnewyork.com/article/media/2012/01/5137028/real-story-
headless-body-topless-bar-argued-veterans-post">HEADLESS BODY IN TOPLESS BAR</strong>
(<em>New York Post<em>, 1982)

                </p>

                <p>

<strong>'I AM DEATH WISH VIGILANTE' (Bernie Goetz turns himself in; <em>Post</em>,
1985)

                </p>

    </body>

</html>
```

2. Write the CSS code to change the color of all <p> elements to "red."

```
<html>
<head>
<style>
p {
    color: red;
}
</style>
</head>
<body>
```

```
<h1>This is a Heading</h1>
<p>This is a paragraph.</p>
<p>This is another paragraph.</p>

</body>
```

3. Change the color of the element with id="para1", to "red".

```
<html>
<head>
<style>
#para1 {
    color: red;
}
</style>
</head>
<body>

<h1>This is a Heading</h1>
<p id="para1">This is a paragraph.</p>
<p>This is another paragraph.</p>

</body>
</html>
```

4. Change the color of all elements with the class "colortext", to "red".

```
<html>
<head>
<style>
.colortext {
    color: red;
}
</style>
</head>
<body>

<h1>This is a Heading</h1>
<p>This is a paragraph.</p>
<p class="colortext">This is another paragraph.</p>
<p class="colortext">This is also a paragraph.</p>

</body>
</html>
```

5. Change the color of all <p> and <h1> elements, to "red". Group the selectors to minimize code.

```
<html>
<head>
<style>
h1, p {
    color: red;
}
</style>
```

```
</head>
<body>

<h1>This is a heading</h1>
<h2>This is a smaller heading</h2>
<p>This is a paragraph.</p>
<p>This is another paragraph.</p>

</body>
</html>
```