Task 1 Soln

```
# Task 1.1
f = open('MINEFIELD.txt', 'r')

n = int(f.readline().strip())

field = [] # initialise the field with all . and one S
for i in range(n):
    field.append(['.'] * n)
field[n // 2][n // 2] = 'S'

mine_list = []
line = f.readline()
while line != '':  # read text file to update mines
    x, y = line.split(',')
    x = int(x)
    y = int(y)
    mine_list.append((x, y))
    field[x][y] = 'M'
    line = f.readline()

f.close()

print("Mine Field:") # print 2D list
for i in range(n):
    for j in range(n):
        print(field[i][j], end = ' ')
    print()
```

```
Mine Field:
. . M . . . .
. . . M . . .
. . . . . . M
. . . S M . .
. . . . . . .
. . . M . . .
. . . . . . .
```

```
# Task 1.2
import random
x = n // 2
y = n // 2
stop = False
win = False
steps = ''
moves = ['UP', 'DOWN', 'LEFT', 'RIGHT']
```

```
while not stop:
    move = random.randint(0, 3)

    if move == 0: # move up
        x -= 1
    elif move == 1: # move down
        x += 1
    elif move == 2: # move left
        y -= 1
    else: # move right
        y += 1

    steps = steps + moves[move] + ' '

    if field[x][y] == 'M': # stop when hit onto mines
        stop = True
    elif x == 0 or x == n - 1 or y == 0 or y == n - 1: # win
        stop = True
        win = True
        field[x][y] = 'P'
    else: # place valid move and move on
        field[x][y] = 'P'

print('STEPS:', steps)
for i in range(n):
    for j in range(n):
        print(field[i][j], end = ' ')
    print()
if win:
    print("WIN! You walked to the boundary!")
else:
    print('LOSE! You stepped onto the mine!')
```

```
STEPS: LEFT UP DOWN DOWN RIGHT RIGHT RIGHT DOWN RIGHT
. . M . . . .
. . . M . . .
. . P . . . M
. . P S M . .
. . P P P P .
. . . M . P P
. . . . . . .
WIN! You walked to the boundary!
```

Marker's Comments:

Task 1.1

- Some students did not close the file after reading it or comment that file automatically closes if use Python's 'with' keyword for opening.
- A significant number of students hard code the dataset values given in the text file. Should extract data from the text file and store it in variable. E.g. 'n = int(file.readline().rstrip())' instead of 'n = 7'
- Most of the students, who did not perform well, are not familiar with the syntax of creating a 2-D array or a grid. Here is the code to set up a *nxn* 2-D array:

```
grid = []
for i in range(n):                         or          grid = [["."] * n for i in range(n)]
    grid.append(["."] * n)
```

- When displaying the contents of the grid, some students attempt incorrectly by outputting the list directly instead of outputting individual values.

```
for i in range(n):                         for x in grid:                       for i in range(n):
    for j in range(n):             or          for i in x:               or         print(" ".join(grid[i]))
        print(grid[i][j], end = " ")               print(i, end = " ")
    print()                                    print()
```

Task 1.2

- Most students did well and had good understanding of the concept of random numbers and were able to generate the random directions
- The most common error was not to first check the soldier stepped on a mine after each move.
- Common mistake included did not update the safe cell with "P" when the soldier walked to the boundary
- Some students did not display the steps taken. This made it very difficult to check whether the contents of the grid was correct.

Task 2 Soln:

Overall comments:

students are advised NOT to add additional printout lines in the output. if print() was added or debug print-statements were made, please comment them out and run again before submission.

While opening csv is within syllabus, writing csv with the csv package is confusing and students are encouraged to treat csv files as normal text files.

```
# Task 2.1
def read_csv(filename):
    books_file = open(filename, "r")
    book_str = books_file.read()
    book_list = book_str.split("\n")
    array = []
    for book in book_list:
        title, author, year = book.split(",")
        array.append([title, author, year])
    books_file.close()
   return array

books_array = read_csv("booklist.csv")
print(len(books_array))
```

```
import csv
# Task 2.1 (alternative by csv package)
def read_csv(filename):
    books_file = open(filename, "r", encoding="utf-8")
    book_list = csv.reader(books_file, delimiter=",")
    array = []
    for book in book_list:
        title, author, year = book
        array.append([title, author, year])
    books_file.close()
    return array

books_array = read_csv("booklist.csv")
print(len(books_array))
print(books_array)
```

```
18
[['White Fang', 'Jack London', '1906'], ['The Wind in the Willows',
'Kenneth Grahame', '1908'], ['Moby Dick', 'Herman Melville', '1851'],
['Jane Eyre', 'Charlotte Bronte', '1847'], ['The Picture of Dorian
Gray', 'Oscar Wilde', '1890'], ['The Three Musketeers', 'Alexandre
Dumas', '1844'], ['Persuasion', 'Jane Austen', '1817'], ['Dream of
the Red Chamber', 'Cao Xueqin', '1791'], ['Little Women', 'Louisa May
Alcott', '1868'], ['The Phantom of the Opera', 'Gaston Leroux',
'1909'], ['Water Margin', 'Shi Naian', '1450'], ['A Christmas Carol',
'Charles Dickens', '1843'], ['One Hundred Years of Solitude',
'Gabriel Garcia Marquez', '1967'], ['Nineteen Eighty-Four', 'George
Orwell', '1949'], ['Journey to the West', 'Wu Chengen', '1592'],
['Romance of the Three Kingdoms', 'Luo Guanzhong', '1522'],
['Fahrenheit 451', 'Ray Bradbury', '1953'], ['War and Peace', 'Leo
Tolstoy', '1867']]
```

<u>*Marker's Comments:</u>

Task 2.1

- Different students approached this part differently with most storing the 2D-array as a list of list, dictionaries, 3-tuples, etc…

```
# Task 2.2
def bubble(array, sort_key):
    sort_dict = {"title": 0, "author": 1, "year": 2}
    if sort_key not in sort_dict:
        return -1
    s_index = sort_dict[sort_key]
    n = len(array)
    for i in range(n-1):
        for j in range(n-1):
            if array[j][s_index] > array[j+1][s_index]:
                array[j], array[j+1] = array[j+1], array[j]
    return array

print(bubble(books_array,"title"))
print(bubble(books_array,"ISBN"))
```

```
[['A Christmas Carol', 'Charles Dickens', '1843'], ['Dream of the Red
Chamber', 'Cao Xueqin', '1791'], ['Fahrenheit 451', 'Ray Bradbury',
'1953'], ['Jane Eyre', 'Charlotte Bronte', '1847'], ['Journey to the
West', 'Wu Chengen', '1592'], ['Little Women', 'Louisa May Alcott',
'1868'], ['Moby Dick', 'Herman Melville', '1851'], ['Nineteen Eighty-
Four', 'George Orwell', '1949'], ['One Hundred Years of Solitude',
'Gabriel Garcia Marquez', '1967'], ['Persuasion', 'Jane Austen',
'1817'], ['Romance of the Three Kingdoms', 'Luo Guanzhong', '1522'],
['The Phantom of the Opera', 'Gaston Leroux', '1909'], ['The Picture of
Dorian Gray', 'Oscar Wilde', '1890'], ['The Three Musketeers',
'Alexandre Dumas', '1844'], ['The Wind in the Willows', 'Kenneth
Grahame', '1908'], ['War and Peace', 'Leo Tolstoy', '1867'], ['Water
Margin', 'Shi Naian', '1450'], ['White Fang', 'Jack London', '1906']]
-1
```

<u>*Marker's Comments:</u>

Task 2.2

- common mistake: while most knew that the correct index was to be compared, many did not swap the entire book and only swapped the author.

```python
# Task 2.3
def merge(array, sort_key):
    sort_dict = {"title": 0, "author": 1, "year": 2}
    if sort_key not in sort_dict:
        return -1
    s_index = sort_dict[sort_key]

    if len(array)<2:
        return array

    mid = len(array) // 2
    left = merge(array[:mid],sort_key)
    right = merge(array[mid:],sort_key)

    merged = []
    while len(left) and len(right):
        if left[0][s_index] <= right[0][s_index]:
            merged = merged + [left.pop(0)]
        else:
            merged = merged + [right.pop(0)]

    merged = merged + left + right

    for i in range(len(array)):
        array[i] = merged[i]

    return array

print(merge(books_array,"author"))
print(merge(books_array,"year"))
```

```
[['The Three Musketeers', 'Alexandre Dumas', '1844'], ['Dream of the Red
Chamber', 'Cao Xueqin', '1791'], ['A Christmas Carol', 'Charles
Dickens', '1843'], ['Jane Eyre', 'Charlotte Bronte', '1847'], ['One
Hundred Years of Solitude', 'Gabriel Garcia Marquez', '1967'], ['The
Phantom of the Opera', 'Gaston Leroux', '1909'], ['Nineteen Eighty-
Four', 'George Orwell', '1949'], ['Moby Dick', 'Herman Melville',
'1851'], ['White Fang', 'Jack London', '1906'], ['Persuasion', 'Jane
Austen', '1817'], ['The Wind in the Willows', 'Kenneth Grahame',
'1908'], ['War and Peace', 'Leo Tolstoy', '1867'], ['Little Women',
'Louisa May Alcott', '1868'], ['Romance of the Three Kingdoms', 'Luo
Guanzhong', '1522'], ['The Picture of Dorian Gray', 'Oscar Wilde',
'1890'], ['Fahrenheit 451', 'Ray Bradbury', '1953'], ['Water Margin',
'Shi Naian', '1450'], ['Journey to the West', 'Wu Chengen', '1592']]
```

```
[['Water Margin', 'Shi Naian', '1450'], ['Romance of the Three
Kingdoms', 'Luo Guanzhong', '1522'], ['Journey to the West', 'Wu
Chengen', '1592'], ['Dream of the Red Chamber', 'Cao Xueqin', '1791'],
['Persuasion', 'Jane Austen', '1817'], ['A Christmas Carol', 'Charles
Dickens', '1843'], ['The Three Musketeers', 'Alexandre Dumas', '1844'],
['Jane Eyre', 'Charlotte Bronte', '1847'], ['Moby Dick', 'Herman
Melville', '1851'], ['War and Peace', 'Leo Tolstoy', '1867'], ['Little
Women', 'Louisa May Alcott', '1868'], ['The Picture of Dorian Gray',
'Oscar Wilde', '1890'], ['White Fang', 'Jack London', '1906'], ['The
Wind in the Willows', 'Kenneth Grahame', '1908'], ['The Phantom of the
Opera', 'Gaston Leroux', '1909'], ['Nineteen Eighty-Four', 'George
Orwell', '1949'], ['Fahrenheit 451', 'Ray Bradbury', '1953'], ['One
Hundred Years of Solitude', 'Gabriel Garcia Marquez', '1967']]
```

```python
# Task 2.4
def reverse(array):
    length = len(array)
    mid = length // 2
    for i in range(mid):
        array[i], array[length-1-i] = array[length-1-i], array[i]
    return array

print(reverse([1,3,5,2,4]))
print(reverse([1,9,6,4]))
```

```
[4, 2, 5, 3, 1]
[4, 6, 9, 1]
```

```python
# Task 2.5
arr = read_csv("newbooks.csv")
merge(arr,"year")
reverse(arr)

new_csv = open("YEAR_name_ct.csv", "w")

book_str = []
for book in arr:
    book_str.append(",".join(book))
ret_str = "\n".join(book_str)
new_csv.write(ret_str)
new_csv.close()
```

<u>Marker's Comments:</u>

Task 2.5

- no concerns for students who used default file writing (as in solution)
- for students who used the csv package, it is worth noting that `csv.writer()` appends `'\r\n'` to the end of line. Hence, either an extra parameter of `lineterminator='\n'` is needed, or the file must be opened with `quotechar=""`
    - students are advised to check their output file if time allows
- a few students created the file with a different name from the one required. it should be created with the name in the format required

<u>Task 3 Soln:</u>

Marker's Comment:

Interpretation of Question:

1. 'p-th element' shall be interpreted as p starts from 1, not 0
2. The attributes are clearly stated in the question and shall be followed closely. Extra methods can be added to support the required methods in the question.
3. Task 3.1, testing for search method shall include both found and not found cases.
4. Task 3.1, testing for insert method, many students miss a case of inserting in the middle, i.e. 1 < p < = size of linked list
5. Task 3.2 makes use of to_String() to display the elements in order, hence we shall take the first element as the top of the stack

Concepts:

6. Inserting/Deleting the first element is ALWAYS a special case to consider since it changes the head of the linked list. Many students missed this case or the conditions.
7. Task 3.2 and 3.3, subclasses can make use of the methods from superclass
8. Attributes are inherited from the superclass and hence no need to add extra.
9. Be meticulous with the range of for loops, or the while loop conditions when we want to traverse to the correct element
10. Both search and to_String methods require RETURN.

Coding Standard:

11. Comments debugging codes for submission
12. Comments to explain the cases for codes and for testing

```
# Task 3.1
class Node:
    def __init__(self, data, next):
        self.data = data
        self.next = next

class LinkedList:
    def __init__(self):
        self.head = None
        self.size = 0

    def to_String(self):
        items = []
        probe = self.head
        while probe != None:
            items.append(probe.data)
            probe = probe.next
        return ', '.join(items)
    def search(self, word):
        found = False
        probe = self.head
        while not found and probe != None:
            if probe.data == word:
                found = True
            else:
                probe = probe.next
        return found

    def insert(self, word, p):
        if p == 1 or self.size == 0: # condition to add at the front
            self.head = Node(word, self.head) # add as head
        else:
            if p > self.size: # special case
                p = self.size + 1
            probe = self.head
            for i in range(p - 2): # probe stops at (p-1)th element
                probe = probe.next
            probe.next = Node(word, probe.next) # add at pth element
        self.size += 1 # update size

    # alternative solution
    def insert(self, word, p):
        if p == 1 or self.size == 0: # condition to add at the front
            self.head = Node(word, self.head)  # add as head
        else:
            if p > self.size: # special case
                probe = self.head
                while probe.next != None: # probe stops at last element
                    probe = probe.next
                probe.next = Node(word, None)# add at the end
            else:
                probe = self.head
                for i in range(p - 2): # probe stops at (p-1)th element
                    probe = probe.next
                probe.next = Node(word, probe.next) # add at pth element
        self.size += 1

    def delete(self, p):
        if p == 1 or self.size == 1: # condition to delete at the front
            self.head = self.head.next # delete head
        else:
            if p > self.size: # special case
                p = self.size
            probe = self.head
            for i in range(p - 2): # probe stops at (p-1)th element
                probe = probe.next
            probe.next = probe.next.next # remove pth element
        self.size -= 1 # update size
    # alternative solution
    def delete(self, p):
        if p == 1 or self.size == 1: # condition to delete at the front
            self.head = self.head.next  # delete head
        else:
            if p > self.size: # special case
                probe = self.head
                while probe.next.next != None:
                    # probe stops at the second last element
                    probe = probe.next
                probe.next = None # remove last element
            else:
                probe = self.head
                for i in range(p - 2): # probe stops at (p-1)th element
                    probe = probe.next
                probe.next = probe.next.next   # remove pth element
        self.size -= 1 # update size


ll = LinkedList()
ll.insert('apple', 5) # p > size, insert at front
ll.insert('durian', 3)  # p > size
ll.insert('pear', 2)  # insert in the middle, p = size
print('items:',ll.to_String())

print(ll.search('apple')) # found
print(ll.search('carrot')) # not found
```

```
items: apple, pear, durian
True
False
```

```
# Task 3.2
class Stack(LinkedList):

    def push(self, word):
        self.insert(word, 1)

    def pop(self):
        self.delete(1)

s = Stack()
s.push('apple')
s.push('pear')
s.push('carrot')
s.pop()
print(s.to_String())
```

```
pear, apple
```

```
# Task 3.3
class Queue(LinkedList):
    def enqueue(self, word):
        self.insert(word, self.size + 1)

    def dequeue(self):
        self.delete(1)

q = Queue()
q.enqueue('apple')
q.enqueue('pear')
q.enqueue('carrot')
q.dequeue()
print(q.to_String())
```

```
pear, carrot
```

<u>Task 4 soln:</u>

1.Some students did not place the web files in the stated folder or named the folder with a different name.

2.Some students saved files (Python files, templates) with different names. Examiners will not mark your work if that happens.

3.Using of Jupyter Notebook to program your web application is not recommended, you should write your code using IDLE.

4. You should use DBBrowser to test out the SQL statements and help in formatting the your SQL statements.

5.There are cases where Python holds the instance of your web application (mostly happens when you use Jupyter notebook for web application). When this happens, the changes are not reflected when you saved and rerun the application. You should try closing all the programs - Jupyter notebook, IDLE etc. or use a different port to run your web application. Code : app.run(port=1234)

6. Ensure all web files used for the web application are stored in the folder stated. Includes the database, the template folder with the template files and the python file that contains your web application codes. Examiners should be able to run your web application (Python file) in the folder without any changes. There are multiple cases of empty database (database without tables) or template files not found.

7. Database should be connected within the route and closed after access (SELECT, INSERT, UPDATE, DELETE). There are students who open the database at the start of the python program and close at the end of the python program, with this, your database connection will not open when you execute your SQL statements in the route. Note that you will need to do a commit after you have executed an INSERT, UPDATE, DELETE statement. For SELECT statements, commit is not required.

8.There is no need to write codes to read the sql file to obtain the SQL statement. You can use the SQL statements in your code.

9. Task4_1 - instead of using hyperlinks, there are student who use different methods - eg. form with dropdown options with submit button. This is more complex (coding) but acceptable since the question did not state that you need to use hyperlink.

10. Task4_2 - SQL

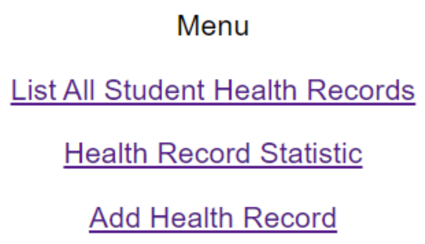
- Some students use INNER JOIN instead of LEFT OUTER JOIN
- Note that you can sort multiple fields. ORDER BY gender, name DESC
- If the question states the fields to be selected, you should not use * (select * from ..)

Task4_3 - SQL

- Some students use count(*)/sum() instead of AVG()
- Use <u>single quotation</u> in SQL statements - this will work for most SQL databases. Eg. use WHERE gender = 'M' instead of "M"

```
<!--Task4_1.htm -->

<!DOCTYPE html>
<html>
<head><title>Menu</title>
<link rel="stylesheet" type="text/css"
href="{{ url_for('static', filename='styles.css') }}">
</head>
<body>
<p>Menu</p>
<p><a href="{{url_for("task4_2")}}">Student health records</a></p>
<p><a href="{{url_for("task4_3")}}">Health record statistics</a></p>
<p><a href="{{url_for("task4_4")}}">Add health record</a></p>

</body>
</html>
```

```
### Task4_1
@app.route('/', methods=['GET'])
def task4_1():
    return render_template('task4_1.html')

@app.route('/task4_2', methods=['GET'])
def task4_2():
    pass

@app.route('/task4_3', methods=['GET'])
def task4_3():
    pass
```



Menu

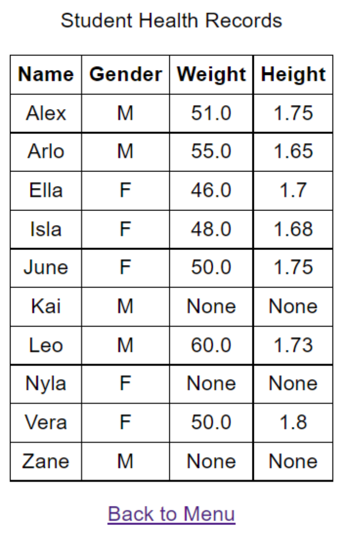
List All Student Health Records

Health Record Statistic

Add Health Record

```
#Task4_2.sql

SELECT student.name, student.gender, StudentHealthRecord.weight,
StudentHealthRecord.height
FROM student LEFT OUTER JOIN StudentHealthRecord
ON student.studentID = StudentHealthRecord.studentid
ORDER BY student.gender, student.name DESC
```

```
<!--Task4_2.htm -->

<!DOCTYPE html>
<html>
<head><title>Student Health Records</title>
<link rel="stylesheet" type="text/css"
href="{{ url_for('static', filename='styles.css') }}">
</head>
<body>
<p>Student Health Records</p>
<table>
<tr><th>Name</th><th>Gender</th><th>Weight</th><th>Height</th></tr>
{% if results|length > 0 %}
       {% for item in results  %}
    <tr>
        <td>{{ item.name }}</td>
              <td>{{ item.getGender() }}</td>
              <td>{{ item.getWeight() }}</td>
              <td>{{ item.getHeight() }}</td>
    </tr>
       {% endfor %}
{%else%}
    <tr>
        <td colspan="2">No logs</td>
    </tr>
{%endif%}
</table>
<p><a href="{{url_for("task4_1")}}">Back to Menu</a></p>
</body>
</html>


### Task4_2 uses Student Class to contains the student information

class Student:
       def __init__(self, name, gender, weight, height, id=0 ):
              self._studentID = id
              self._name=name
              self._gender =gender
              self._weight=weight
              self._height=height

       def getStudentID(self):
              return self._studentID

       def setStudentID(self, id):
              self._studentID=id

       def getName(self):
              return self._name

       def setName(self, name):
              self._name=name
        def getGender(self):
                return self._gender

        def setGender(self, gender):
                self._gender=gender

        def getWeight(self):
                return self._weight

        def setWeight(self, weight):
                self._weight=f'{weight:.2f}'

        def getHeight(self):
                return self._height

        def setHeight(self, height):
                self._height=f'{height:.2f}'

### Task4_2
@app.route('/all')
def task4_2():
        sql="select  student.name, student.gender,
StudentHealthRecord.weight,StudentHealthRecord.height from student left outer join
StudentHealthRecord on student.studentID = StudentHealthRecord.studentid  order by
name"
        db = sqlite3.connect('students.db')
        db.row_factory = sqlite3.Row
        cursor = db.execute(sql)
        all_rows = cursor.fetchall()
        cursor.close()
        db.close()
        listx=[]
        for row in all_rows:
              s=Student(row["name"], row["gender"], row["weight"],row["height"])
              listx.append(s)
        return render_template('task4_2.html', results=listx)
```



Student Health Records

Name	Gender	Weight	Height
Alex	M	51.0	1.75
Arlo	M	55.0	1.65
Ella	F	46.0	1.7
Isla	F	48.0	1.68
June	F	50.0	1.75
Kai	M	None	None
Leo	M	60.0	1.73
Nyla	F	None	None
Vera	F	50.0	1.8
Zane	M	None	None

Back to Menu

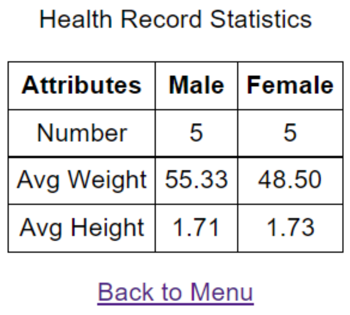
```
#Task4_3.sql

SELECT  gender, COUNT(*), AVG(weight), AVG(height) FROM student
INNER JOIN StudentHealthRecord ON
student.StudentID=StudentHealthRecord.StudentID
GROUP BY gender
```

Alternatively …

```
SELECT  COUNT(*) FROM student where gender=’M’
SELECT  COUNT(*) FROM student where gender=’F’
SELECT  AVG(weight) FROM student INNER JOIN StudentHealthRecord ON
student.StudentID=StudentHealthRecord.StudentID
WHERE gender=’M’
SELECT  AVG(weight) FROM student INNER JOIN StudentHealthRecord ON
student.StudentID=StudentHealthRecord.StudentID
WHERE gender=’F’
SELECT  AVG(height) FROM student INNER JOIN StudentHealthRecord ON
student.StudentID=StudentHealthRecord.StudentID
WHERE gender=’M’
SELECT  AVG(height) FROM student INNER JOIN StudentHealthRecord ON
student.StudentID=StudentHealthRecord.StudentID
WHERE gender=’F’
```

```
<!--Task4_3.htm -->

<!DOCTYPE html>
<html>
<head><title>Health Record Statistics</title>
<link rel="stylesheet" type="text/css"
href="{{ url_for('static', filename='styles.css') }}">
</head>
<body>
<p>Health Record Statistics</p>
<table>
<tr><th>Attributes</th><th>Male</th><th>Female</th></tr>
{% if results|length > 0 %}
      {% for item in results  %}
    <tr>
        <td>{{ item.getAttribute() }}</td>
             <td>{{ item.getMale() }}</td>
             <td>{{ item.getFemale() }}</td>
    </tr>
      {% endfor %}
{%else%}
    <tr>
        <td colspan="3">No logs</td>
    </tr>
{%endif%}
</table>
<p><a href="{{url_for("task4_1")}}">Back to Menu</a></p>
</body>
</html>
```

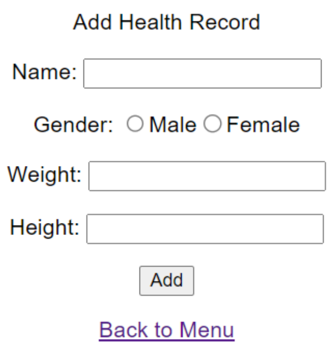
```
### Task4_3 uses Record Class to contains the record information

class Record:
       def __init__(self, attribute):
              self._attribute = attribute
              self._male=0
              self._female=0

       def getAttribute(self):
              return self._attribute

       def setAttribute(self, attribute):
              self._attribute=attribute

       def getMale(self):
              return self._male

       def setMale(self, male):
              if self._attribute=="Number":
                     self._male= f'{male}'
              else:
                     self._male= f'{male:.2f}'

       def getFemale(self):
              return self._female

       def setFemale(self, female):
              if self._attribute=="Number":
                     self._female=f'{female}'
              else:
                     self._female=f'{female:.2f}'

### Task4_3
@app.route('/statistics', methods=['GET'])
def task4_3():
       db = sqlite3.connect('students.db')
       db.row_factory = sqlite3.Row
       sql="select  gender as gender, count(*) as cnt, avg(weight) as wt,
avg(height) as ht from student left outer join StudentHealthRecord on
student.StudentID=StudentHealthRecord.StudentID group by gender"
       cursor = db.execute(sql)
       all_rows = cursor.fetchall()
       cursor.close()
       db.close()
       listx=[]
       numberRec = Record("Number")
       weightRec = Record("Avg Weight")
       heightRec = Record("Avg Height")

       for row in all_rows:
              if row["gender"]=="M":
                     numberRec.setMale(row["cnt"])
                     weightRec.setMale(row["wt"])
                     heightRec.setMale(row["ht"])
              else:
                     numberRec.setFemale(row["cnt"])
                     weightRec.setFemale(row["wt"])
                     heightRec.setFemale(row["ht"])
       listx.append(numberRec)
       listx.append(weightRec)
       listx.append(heightRec)
       return render_template('task4_3.html', results=listx)
```



Health Record Statistics

Attributes	Male	Female
Number	5	5
Avg Weight	55.33	48.50
Avg Height	1.71	1.73

```
#Task4_4.sql

INSERT INTO Student(Name, Gender) VALUES(‘Helen’,’F’)
##Assumming the studentID is 12
INSERT INTO StudentHealthRecord (StudentID, Weight, Height) VALUES (12, 48.7, 1.72)
```



```
<!--Task4_4.html -->

<!DOCTYPE html>
<html>
<head><title>Add Health Record</title>
<link rel="stylesheet" type="text/css"
href="{{ url_for('static', filename='styles.css') }}">
</head>
<body>
<p>Add Health Record</p>
<form method="POST" action="/add" >
    <p><label for="name" >Name: </label><input type="text" value="" name="name"
id="name" ></p>
       <p><label for="gender" >Gender: </label><input type="radio" value="M"
name="gender" id="gender" >Male</input><input type="radio" value="F" name="gender"
id="gender" >Female</input></p>
       <p><label for="weight" >Weight: </label><input type="text" value=""
name="weight" id="weight" ></p>
       <p><label for="height" >Height: </label><input type="text" value=""
name="height" id="height" ></p>
    <p><input type="submit" name="action" value="Add" ></p>
</form>
<p><a href="{{url_for("task4_1")}}">Back to Menu</a></p>
</body>
</html>

### Task4_4
@app.route('/add', methods=['GET', 'POST'])
```

```
def task4_4():
      if request.method=='GET':
            return render_template('task4_4.html')
      if 'action' in request.form:
            action = request.form['action']
            name = request.form['name']
            gender = request.form['gender']
            weight = request.form['weight']
            height = request.form['height']
      if action == 'Add':
            try:
                  db = sqlite3.connect('students.db')
                  cur = db.cursor()
                  cur.execute("Insert into Student(Name, Gender)
values(?,?)",(name,gender))
                  studentID = cur.lastrowid
                  cur = db.execute("INSERT INTO StudentHealthRecord (StudentID,
Weight, Height) VALUES (?, ?,?)",(studentID,weight,height))
                  db.commit()
                  cur.close()
                  db.close()
                  return render_template('Task4_4k.html', msg="Added
successfully")
            except:
                  if db:
                        db.close()
                        return render_template('Task4_4k.html',  msg="Add
Error")
                  else:
                        return redirect(url_for('task4_1'))
      else:
            result_msg=''
            return redirect(url_for('task4_1'))
```

```
<!--Task4_5.htm not required -->

<!DOCTYPE html>
<html>
<head><title>Add Health Record</title>
<link rel="stylesheet" type="text/css"
href="{{ url_for('static', filename='styles.css') }}">
</head>
<body>
<p>Add Health Record</p>
<p> Record added successfully </p>
<p><a href="{{url_for("task4_1")}}">Back to Menu</a></p>
</body>
</html>
```