INSTITUTION PRACTICAL TRAINING REPORT

on

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for the award of the degree

Bachelor of Technology In
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To

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INDEX

Sr. No.	Name of Experiment	Date Of Submission	Sign
1.	DSA Programs a. WAP to implement Linear search b. WAP to implement Binary search c. WAP to implement Selection sort d. WAP to implement Bubble sort e. WAP to Implement Insertion sort		
2.	PL Programs a. WAP to find Factorial of a number b. WAP to print Fibonacci series c. WAP to print (*) pattern series d. WAP to implement function e. WAP to implement class		
3.	Python Program a. WAP to implement various Operators (Arithmetic, Relational, Logical, Bitwise, Assignment and Membership) using Python. b. WAP to find the sum of 3-digit number entered. c. WAP to print table of a number entered by the user using for loop and While loop. d. WAP to implement five inbuild functions on Strings. e. WAP to square of list using List Comprehension		
4.	HTML Programs a. WAP in html to print hello b. WAP in html to show heading tag c. WAP in html to show various formatting tags d. WAP in html to create ordered and unordered list e. WAP in html to create a student information table f. WAP in html to create employee feedback form		

DSA

1. WAP to implement Linear search

Input:

```
#include<iostream>
using namespace std;
int main(){
   int n,a[20],x;
   cout<<"Enter the number of elements: "<<endl;
   cin>>n;
   cout<<"Enter " << n <<" elements: ";
   for(int i=0;i<n;i++)
   cin>>a[i];
   cout<<"Enter search element: "<<endl;
   cin>>x;
   for(int i=0;i<=n;i++){
      if(a[i]==x){
         cout<<"Element found at index:" <<i<<endl;
         break;
      }

      if(i==n){
         cout<<"Element not found!";
      }
   }
   cout<<"Name: Vidit Sachdev"<<endl
      <<"Roll No.: 2337900"<<endl;
   return 0;
}
```

Output:

```
Enter the number of elements:
9
Enter 9 elements: 1 6 4 3 2 0 8 7 5
Enter search element:
7
Element found at index:7
Name: Vidit Sachdev
Roll No.: 2337900
```

2. WAP to implement Binary search

Input:

```
#include<iostream>
using namespace std;
int main(){
 int c,f,l,mid,n,x,a[20];
 cout<<("Enter the number of elements: ");
 cin>>(n);
 cout<<"Enter "<< n << " integers: ";
 for(c=0;c<n;c++)
 cin>>a[c];
 cout<<("Enter the search element: ");
 cin>>x;
 f=0;
 l=n-1;
 mid=(f+l)/2;
 while(f<=l){
  if (a[mid]<x)
  f=mid+1;
  else if(a[mid]==x){
   cout<<"Element found at location "<< mid+1<<endl;
   break;
  }
  else
  l=mid-1;
  mid=(f+l)/2;
 }
 if(f>l){
  cout<<"Element not in the list"<<endl;
 }
 cout<<"Name: Vidit Sachdev"<<endl
     <<"Roll No.: 2337900"<<endl;
     return 0;
}
```

Output:

3. WAP to implement Selection sort

Input:

```
#include <iostream> using namespace std; int
main(){    int a[200], n, b, c, d, position, swap;
cout<<"Enter the number of elements in array: ";
cin>>n;    cout<<"Enter " << n << " integers: ";
for(c = 0; c < n; c++)       cin>>a[c];

  for(c = 0; c < (n - 1); c++)
   {
     position = c;       for(d
= c + 1; d < n; d++)
      {
        if(a[position] > a[d])
position = d;
      }

      if(position != c)
       {
         swap = a[c];
a[c] = a[position];
a[position] = swap;
      }
  }
  cout<<"Sorted list in ascending order: ";
for(c = 0; c < n; c++)       cout<<a[c]<<" ";
cout<<"\nName: Vidit Sachdev"<<endl
<<"Roll No.: 2337900"<<endl;    return 0;
}
```

Output:

4. WAP to implement Bubble sort

Input:

```
#include<iostream> using namespace std;
int main(){    int a[10],n,c,d,v,swap;
cout<<"Enter the number of elements: ";
cin>>n;    cout<<"Enter "<< n << " integers:
";    for(c=0;c<n;c++)    cin>>a[c];
for(c=0;c<n;c++)
  {
    for(d=0;d<n-1;d++)
    {
      if(a[d]>a[d+1])
      {
        swap=a[d];
a[d]=a[d+1];
a[d+1]=swap;
      }
    }
  }
  cout<<"Sorted list in ascending order: ";
for(c=0;c<n;c++)    cout<<a[c]<<" ";
cout<<"\nName: Vidit Sachdev"<<endl
<<"Roll No.: 2337900"<<endl;    return 0;
}
```

Output:

```
Enter the number of elements: 9
Enter 9 integers: -7 -3 -9 -2 -4 -1 1 8 0
Sorted list in ascending order: -9 -7 -4 -3 -2 -1 0 1 8
Name: Vidit Sachdev
Roll No.: 2337900
```

5. WAP to Implement Insertion sort

Input:

```
#include<iostream>
using namespace std;
int main(){
   int n,a[10],i,j,key;
   cout<<"enter number of elements: ";
   cin>>n;
   cout<<"Enter " << n << " integers: ";
   for(i=0;i<n;i++){
      cin>>a[i];
   }
   for(i=0;i<n;i++){
   key=a[i];
   j=i-1;
   while(j>=0 && a[j]>key){
   a[j+1]=a[j];j--;
   }
   a[j+1]=key;
   }
   cout<<"sorted array in ascending order: ";
   for(i=0;i<n;i++){
      cout<<a[i]<<" ";
   }
   cout<<"\nName: Vidit Sachdev"<<endl
      <<"Roll No.: 2337900"<<endl;
   return 0;
}
```

Output:

```
enter number of elements: 5
Enter 5 integers: -8 9 0 35 20
sorted array in ascending order: -8 0 9 20 35
Name: Vidit Sachdev
Roll No.: 2337900
```

PL

1. WAP to find Factorial of a number

   Input:

```
#include<iostream>
#include<cmath>
using namespace std;
int main(){
   int m,fact=1,i=1;
   cout<<"Enter the number: ";
   cin>>m;
   for(i=1;i<=m;i++){
      fact*=i;
   }
   cout<<"Factorial: "<<' '<<fact;
   cout << "\nName: Vidit Sachdev" << endl
        << "Roll No.: 2337900" << endl;
   return 0;
}
```

   Output:

```
Enter the number: 5
Factorial:  120
Name: Vidit Sachdev
Roll No.: 2337900
```

2. WAP to print Fibonacci series

Input:

```
#include <iostream>
using namespace std;
int fibo(int n) {
   if (n <= 1) {
      return n;
   }
   return fibo(n-1) + fibo(n-2);
}
void FiboPrint(int n) {
   cout << "Fibonacci series: 0";
   if (n > 1) {
      cout << " 1";
   }
   for (int i = 2; i < n; ++i) {
      cout << ' ' << fibo(i);
   }
}

int main() {

   int a;
   cout << "Enter a number: ";
   cin >> a;
   if (a <= 0) {
      cout << "Please enter a positive number." << endl;
      return 1;}
   FiboPrint(a);
   cout << "\nName: Vidit Sachdev" << endl
      << "Roll No.: 2337900" << endl;
   return 0;
}
```

Output:

```
Enter a number: 5
Fibonacci series: 0 1 1 2 3
Name: Vidit Sachdev
Roll No.: 2337900
```

3.

WAP to print (*) pattern series

Input:

```
#include<iostream>
using namespace std;
int main(){
   int i,j,n; cout<<"Maximum number of stars?? \n"; cin>>n;
   for(i=1;i<=n;i++){
      for(j=1;j<=i;j++){
         cout<<"* "; }
      cout<<"\n";
   }
   for(i=n;i>=1;i--){
      for(j=1;j<=i;j++){
         cout<<"* ";
      }
      cout<<"\n";
   }
   for(i=1;i<=n;i++){
      for(j=1;j<=n;j++){
      cout<<"*";
      } cout<<"\n";
   }
cout << "\nName: Vidit Sachdev" << endl
     << "Roll No.: 2337900" << endl;
   return 0; }
```

Output:

```
Maximum number of stars??
4
*
* *
* * *
* * * *
* * * *
* * *
* *
*
****
****
****
****

Name: Vidit Sachdev
Roll No.: 2337900
```

4.

WAP to implement function

Input:

```
#include<iostream>
using namespace std;
void sum(int a, int b){
   int sum;
   sum=a+b;
   cout<<"Sum: "<<sum;
}

int main(){
   int x,y;
   cout<<"Enter two integers: ";
   cin>>x>>y;
   sum(x,y);
   cout << "\nName: Vidit Sachdev" << endl
      << "Roll No.: 2337900" << endl;
   return 0;
}
```

Output:

5.

WAP to implement class

Input:

```
#include<iostream>
#include<string>
using namespace std;
class house{
private:
   int length,breadth;
public:
   void setData(int x, int y){
      length=x;
      breadth=y;
   }
   void area(){
      cout<<"Length: "<<length<<endl;
      cout<<"Breadth: "<<breadth<<endl;
      cout<<"Area: "<<length*breadth;
   }
};
int main(){
   house h1;
   h1.setData(500,600);
   h1.area();
   cout << "\nName: Vidit Sachdev" << endl
      << "Roll No.: 2337900" << endl;
   return 0;
}
```

Output:

```
Length: 500
Breadth: 600
Area: 300000
Name: Vidit Sachdev
Roll No.: 2337900
```

Python

1.

WAP to implement various Operators (Arithmetic, Relational, Logical, Bitwise, Assignment and Membership) using Python.

Input: a = 10

```
b = 5 print("Arithmetic Operators:")
print(f"Addition: {a} + {b} = {a + b}")
print(f"Subtraction: {a} - {b} = {a - b}")
print(f"Multiplication: {a} * {b} = {a * b}")
print(f"Division: {a} / {b} = {a / b}")
print(f"Modulus: {a} % {b} = {a % b}")
print(f"Exponentiation: {a} ** {b} = {a ** b}")
print(f"Floor Division: {a} // {b} = {a // b}")

print("\nRelational Operators:")
print(f"a > b: {a > b}") print(f"a
< b: {a < b}") print(f"a == b: {a
== b}") print(f"a != b: {a != b}")
print(f"a >= b: {a >= b}")
print(f"a <= b: {a <= b}")

x = True y = False
print("\nLogical Operators:")
print(f"x and y: {x and y}")
print(f"x or y: {x or y}")
print(f"not x: {not x}")

print("\nBitwise Operators:") print(f"a & b:
{a & b}")  # Bitwise AND print(f"a | b: {a |
b}")  # Bitwise OR print(f"a ^ b: {a ^ b}")  #
Bitwise XOR print(f"~a: {~a}")       # Bitwise
NOT print(f"a << 1: {a << 1}")  # Bitwise Left
Shift print(f"a >> 1: {a >> 1}")  # Bitwise Right
Shift

print("\nAssignment Operators:")
c = a print(f"c = a: {c}") c += b
print(f"c += b: {c}") c -= b
print(f"c -= b: {c}") c *= b
```

```
print(f"c *= b: {c}") c /= b print(f"c /= b: {c}") c
%= b print(f"c %= b: {c}") c **= b print(f"c **=
b: {c}") c //= b print(f"c //= b: {c}")
name="Vidit" sequence = [1, 2, 3, 4, 5]
print("\nMembership Operators:") print(f"3 in
sequence: {3 in sequence}") print(f"t in name:
{'t' in name}") print(f"5 not in sequence: {3 not
in sequence}") print(f"d not in vidit: {'d' not in
name}") print("\n\nVidit Sachdev \n2337900")
```

Output:

2. WAP to find the sum of 3-digit number entered. Input:

```
num=int(input("Enter a three digit number"))
num1=num%10
num=num//10
num2=num%10
num3=num//10
sum=num1+num2+num3
print("Sum of num is ",sum)
print("Vidit Sachdev \n2337900")
```

Output:

3. WAP to print table of a number entered by the user using for loop and
While loop

Input:

(I) #While Loop

```
a=int(input('enter a number: '))
i=1 while i<11:
    print(a,'*',i,'=',a*i)
    i+=1
    print("Vidit Sachdev \n2337900")
```

Output:

(i)

```
enter a number: 12
12 * 1 = 12
12 * 2 = 24
12 * 3 = 36
12 * 4 = 48
12 * 5 = 60
12 * 6 = 72
12 * 7 = 84
12 * 8 = 96
12 * 9 = 108
12 * 10 = 120
Vidit Sachdev
2337900
```

Input:

(ii) #For Loop

```
a=int(input('enter a number: '))
for i in range(1,11):
print(a,'*',i,'=',a*i)
print("Vidit Sachdev\n2337900")
```

Output:

(ii)

```
enter a number: 10
10 * 1 = 10
10 * 2 = 20
10 * 3 = 30
10 * 4 = 40
10 * 5 = 50
10 * 6 = 60
10 * 7 = 70
10 * 8 = 80
10 * 9 = 90
10 * 10 = 100
Vidit Sachdev
2337900
```

4. WAP to implement five inbuild functions on Strings.

Input:

```
s="hello world" s1=[2,3,1,6,5,4]
print(len(s)) print(max(s1))
print(sorted(s1))
print(s.isalpha()) print(s.find('p'))
print("Vidit Sachdev
\n2337900")
```

Output:

```
11
6
[1, 2, 3, 4, 5, 6]
False
-1
Vidit Sachdev
2337900
```

5. WAP to square of list using List Comprehension Input:

```
numbers = [1, 2, 3, 4, 5, 6, 7, 8, 9,
10] squares = [x**2 for x in
numbers] print(squares) print("Vidit
Sachdev \n2337900")
```

Output:

```
[1, 4, 9, 16, 25, 36, 49, 64, 81, 100]
Vidit Sachdev
2337900
```

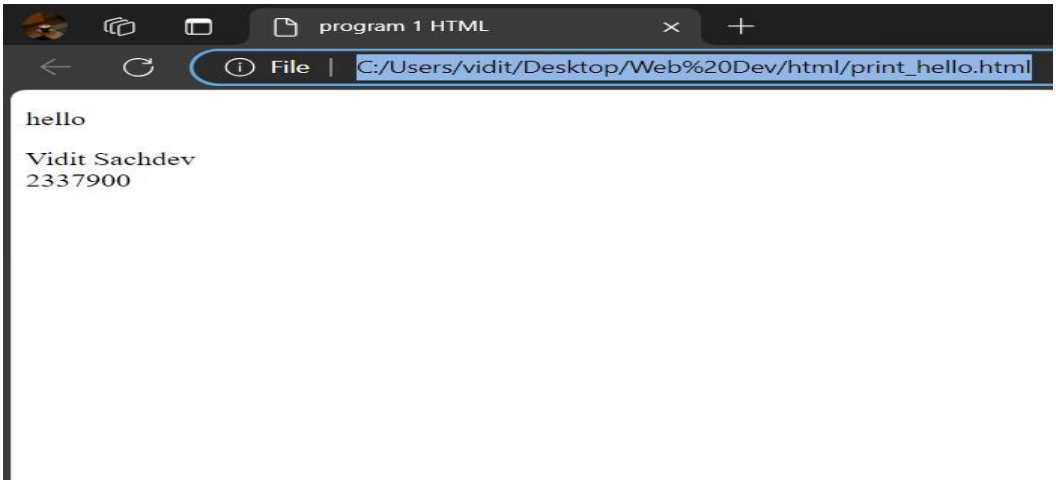
HTML

1. WAP in html to print helloInput:

```
<!DOCTYPE Html>
<html>
  <title>
program 1 HTML
</title>

  <body>
    <p>hello</p>
  </body>
 </html>
```

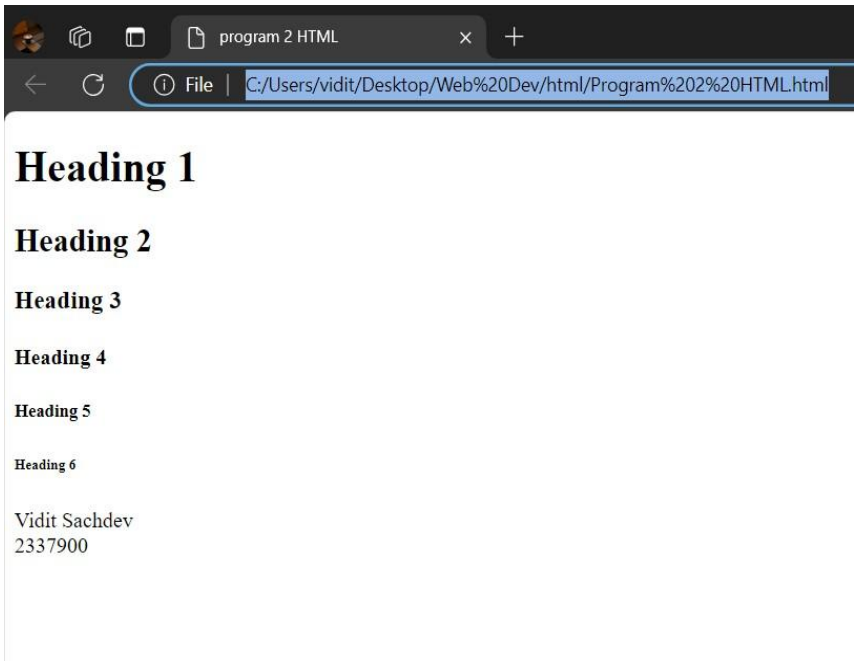
Output:



2. WAP in html to show heading tag.Input:

```
<!DOCTYPE HTML>
<html>
  <title>program 2 HTML</title>
  <body>
    <h1>Heading 1</h1>
    <h2>Heading 2</h2>
    <h3>Heading 3</h3>
    <h4>Heading 4</h4>
    <h5>Heading 5</h5>
    <h6>Heading 6</h6>
  </body>
 </html>
```

Output:

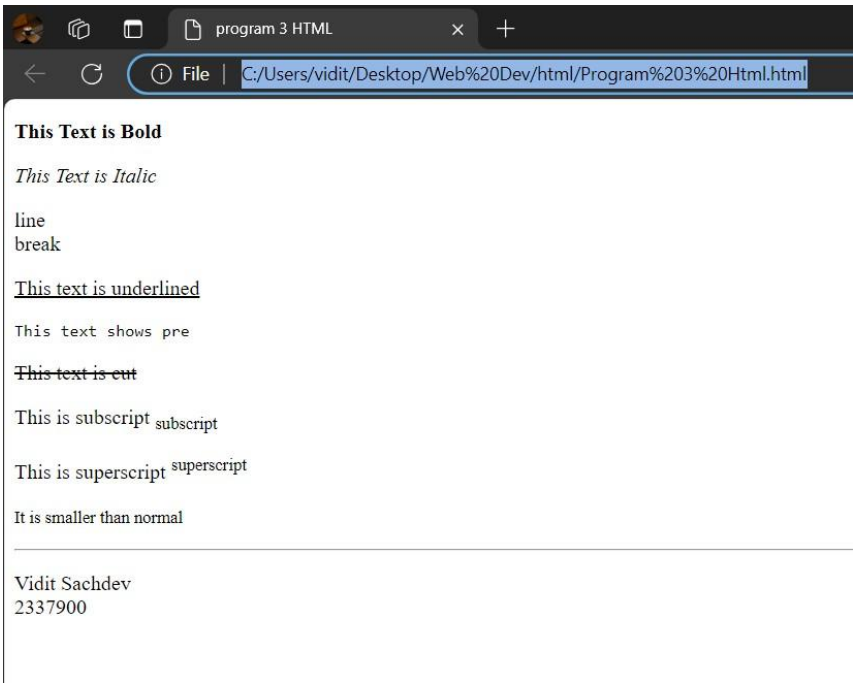


3. WAP in html to show various formatting tags

Input:

```
<!DOCTYPE html>
<html>
  <title>program 3 HTML</title>
  <body>
    <p><b>This Text is Bold</b></p>
    <p><I>This Text is Italic</I></p>
    <p>line<br>break</p>
    <p><u>This text is underlined</u></p>
    <p><pre>This text shows pre</pre></p>
    <p><s>This text is cut</s></p>
    <p>This is subscript <sub>subscript</sub></p>
    <p>This is superscript <sup>superscript</sup></p>
    <p><small>It is smaller than normal</small></p>
    <hr>
    <p>Vidit Sachdev<br>2337900</p>
  </body>
</html>
```

Output:



4. WAP in html to create ordered and unordered list

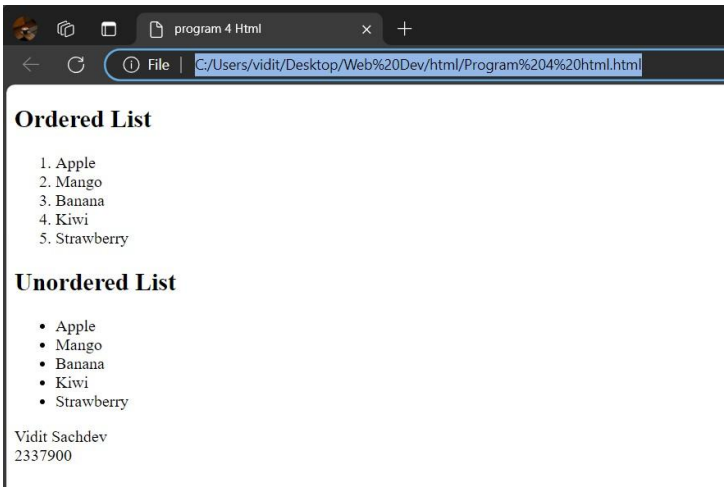
Input:

```
<!DOCTYPE HTML>
<html>
  <title>program 4 Html</title>
  <body>
    <h2>Ordered List</h2>
    <ol>
      <li>Apple</li>
      <li>Mango</li>
      <li>Banana</li>
      <li>Kiwi</li>
      <li>Strawberry</li>
</ol>

    <h2>Unordered List</h2>
    <ul>
      <li>Apple</li>
      <li>Mango</li>
      <li>Banana</li>
      <li>Kiwi</li>
      <li>Strawberry</li>
</ul>

    <p>Vidit Sachdev<br>2337900</p>
  </body>
</html>
```

Output:

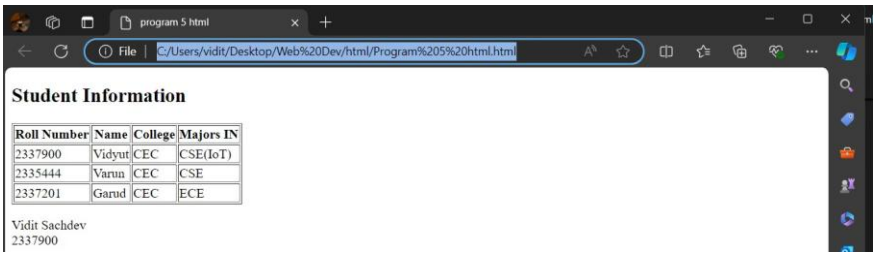


5. WAP in html to create a student information table.

Input:

```
<!DOCTYPE html>
<html>
<head>
  <title>program 5 html</title>
</head>
<body>
<h2>Student Information</h2>
<table border="1">
  <tr>
    <th>Roll Number</th>
    <th>Name</th>
    <th>College</th>
    <th>Majors IN</th>
  </tr>
  <tr>
    <td>2337900</td>
    <td>Vidyut</td>
    <td>CEC</td>
    <td>CSE(IoT)</td>
  </tr>
  <tr>
    <td>2335444</td>
    <td>Varun</td>
    <td>CEC</td>
    <td>CSE</td>
  </tr>
  <tr>
    <td>2337201</td>
    <td>Garud</td>
    <td>CEC</td>
    <td>ECE</td>
```

```
    </tr>
  </table>
  <p>Vidit Sachdev<br>2337900</p>
  </body>
  </html> Output:
```



6. WAP in html to create employee feedback form

Input:

```
  <!DOCTYPE html>
  <html>
  <head>
    <title>program 6 html</title>
  </head>
  <body>
  <h2>Employee Feedback Form</h2>
  <form action="/submit-feedback" method="post">
    <label for="name">Employee Name:</label><br>
    <input type="text" id="name" name="name"><br><br>
    <label for="emp_number">Employee
Number:</label><br>
    <input type="text" id="emp_number"
name="emp_number"><br><br>
    <label for="facilities">How did you like the new facilities? (1
= Best, 5 = Worst):</label><br>
    <select id="facilities" name="facilities">
      <option value="1">1</option>
      <option value="2">2</option>
      <option value="3">3</option>
      <option value="4">4</option>
      <option value="5">5</option>
    </select><br><br>
    <label for="hod">How was your Head of Department? (1 = Best,
5 = Worst):</label><br>
    <select id="hod" name="hod">
      <option value="1">1</option>
      <option value="2">2</option>
      <option value="3">3</option>
      <option value="4">4</option>
      <option value="5">5</option>
    </select><br><br>
```

```
            <label for="communication">How was the communication?
(1 = Best, 5 = Worst):</label><br>
            <select id="communication" name="communication">
              <option value="1">1</option>
              <option value="2">2</option>
              <option value="3">3</option>
              <option value="4">4</option>
              <option value="5">5</option>
            </select><br><br>
            <label for="commutation">How was the commutation facility?
(1 = Best, 5 = Worst):</label><br>
            <select id="commutation" name="commutation">
              <option value="1">1</option>
              <option value="2">2</option>
              <option value="3">3</option>
              <option value="4">4</option>
              <option value="5">5</option>
            </select><br><br>
            <label for="suggestions">Any suggestions:</label><br>
            <textarea id="suggestions" name="suggestions" rows="4"
cols="50"></textarea><br><br>
            <input type="submit" value="Submit">
        </form>
        </body>
        </html>
```

Output:

Employee Feedback Form

Employee Name:

Employee Number:

How did you like the new facilities? (1 = Best, 5 = Worst):
1

How was your Head of Department? (1 = Best, 5 = Worst):
1

How was the communication? (1 = Best, 5 = Worst):
1

How was the commutation facility? (1 = Best, 5 = Worst):
1

Any suggestions:

Submit