Que1 A college contains many departments. Each department can offer any number of courses. Many instructors can work in a department. An instructor can work only in one department. For each department there is a Head. An instructor can be head of only one department. Each instructor can take any number of courses. A course can be taken by only one instructor. A student can enroll for any number of courses. Each course can have any number of students.

**Draw an ER diagram for this schema that takes into account all the assertions given.**

Ans.
As we all know that ERD comprises of entities, attributes and relationship among entities.

Therefore, the following four entity set and their attributes are identified:

1. **Department**: d_id, d_name, d_location, d_budget
2. **Course**: c_id, c_name, c_duration, c_fee
3. **Student**: s_roll_no, s_name, s_dob, s_mobile, s_address, s_email_id
4. **Instructor**: i_id, i_name, i_dob, i_mobile, i_email_id, i_address, i_qualification

The following relationships set and participation constraints are identified:

<table>
<thead>
<tr>
<th>Relationships types and Entities involved in</th>
<th>Participation Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>One Department Offers Many Courses</td>
<td>Total: Course, Partial: Department</td>
</tr>
<tr>
<td>Many Instructors Works on One Department</td>
<td>Total: Instructor, Partial: Department</td>
</tr>
<tr>
<td>One Department Headed by One Instructor</td>
<td>Total: Department, Partial: Instructor</td>
</tr>
<tr>
<td>One Instructor Takes Many Courses.</td>
<td>Total: Course, Partial: Instructor</td>
</tr>
<tr>
<td>Many Students Enrolled in Many Courses</td>
<td>Total: Student, Partial: Course</td>
</tr>
</tbody>
</table>
ERD using Crow’s Foot Notations

Department
- *d_id
- d_name
- d_location
- d_budget

Course
- *c_id
- c_name
- c_duration
- c_fee

Student
- *s_roll_no
- s_name
- s_dob
- {s_mobile}
- s_address
- {s_email_id}

Instructor
- *i_id
- i_name
- i_dob
- {i_mobile}
- {i_email_id}
- i_address
- i_qualification

Offers

Headed_by

Enrolls in

Works on

Takes
**Exercise:**

**Que** Consider the following schema:

CUSTOMER(id, name, address)

ORDER(ordernbr, date, id)

ORDERLIST(ordernbr, barcode, company, quantity)

PRODUCT(barcode, description)

VENDOR(vendornbr, company, rating)

VENPRODLINK(barcode, vendornbr, price)

Construct an E-R diagram for the above schema; specify keys, mapping cardinalities, participation constraints (if necessary).