**Exercise 1**

**We need to store in a file the following information:**

**The personal data of students who are enrolled in the module database management:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **DNI** | **Surnames** | **Name** | **Address** | **Phone** | **Studies** | **Date\_of\_ birth** |

**A) Based on these data fills in the below table:**

|  |  |
| --- | --- |
| **Filename:** | DATA\_STUDENTS\_DATABASE\_GBD |
| **Attributes:** | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | DNI | Surnames | Name | Address | Phone | Studies | Date of birth | |
| **Sample record:** | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 43125340h | Ruiz Martínez | Pedro Antonio | c/Sagasta nº1 | 611111111 | E.S.O. | 11/04/1982 | |

**B) If we keep them on the hard drive of your computer, what type of storage device is it?**

Device of massive storage or secondary memory of directional type.

**C) What would be the most appropriate kind of access to query data from a student enrolled if the file has an indexed sequential organization?**

Access through a query sequence to the area of indices to determine the segment where you will find the desired entry.

**Exercise 2**

**A) String together the following records with pointers to logically sort in ascending order by the value of its key.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **3** | **ISO** | **5** | **PAR** | **0** | **FHW** | **6** | **GSBD** | **1** | **LMGI** | **2** | **FOL** | **4** |

**Header pointer**

**Logical End**

B) What type of organization is it?

Linked-Sequential Organization because are sequential file organization managed by pointers that allow us to have the records sorted by a different logical order of the physical order in which they are recorded.

**C) How is called the pointer that marks the first record?**

Record header

**Exercise 3**

**Stored in a file with random organization on the following records:**

|  |  |
| --- | --- |
| **KEY** | **DATA** |
| **ISO** | **Implementation of operating systems** |
| **PAR** | **Planning and Network Management** |
| **FHW** | **Fundamentals of hardware** |
| **GSBD** | **Database Management** |
| **LMGI** | **Markup Language and information management systems** |
| **FOL** | **Training and Guidance** |

**Keys' transformation algorithm:**

**For each character in the key, get the corresponding numerical value according to the alphabetically order. Add the equivalent values ​​for all characters and, finally, subtract 32 from the value obtained.**

**Example: FOL (6 + 16 + 12 = 34-32 = 2 ). Address storage: 2**

|  |  |  |
| --- | --- | --- |
| **Address** | **KEY** | **DATA** |
| **1** | **GSBD** | **Database Management** |
| **2** | **FOL** | **Training and Guidance** |
| **3** |  |  |
| **4** |  |  |
| **5** | **PAR** | **Planning and Network Management** |
| **6** | **FHW** | **Fundamentals of hardware** |
| **7** |  |  |
| **8** |  |  |
| **9** | **LMGI** | **Markup Language and information management systems** |
| **10** | **KEY** | **DATA** |
| **11** |  |  |
| **12** |  |  |
| **13** | **ISO** | **Implementation of operating systems** |

|  |
| --- |
| **GRADING CRITERIA: The score assigned to this exercise is 2 points that correspond to the correct calculation of storage addresses and their placement in the file.** |

**Exercise 4:**

**Create an indexed sequential organization structure with the following information:**

|  |  |  |
| --- | --- | --- |
| **MODULE** | **CODE** | **HOURS PER WEEK** |
| **0369** | **Implementation of operating systems** | **8** |
| **0370** | **Planning and Managing Networks** | **6** |
| **0371** | **Fundamentals of hardware** | **3** |
| **0372** | **Database Management** | **6** |
| **0373** | **Markup Language and Information Systems** | **4** |
| **0380** | **Training and Guidance** | **3** |
| **0374** | **Operating Systems Administration** | **7** |
| **0375** | **Network and Internet Services** | **7** |
| **0376** | **Implementing Web Applications** | **5** |
| **0377** | **Management management systems of databases** | **3** |
| **0378** | **Security and high availability** | **5** |
| **0381** | **Business and Entrepreneurial Initiative** | **3** |

**Size of each block or segment: 4**

**INDEXES AREA**

|  |  |
| --- | --- |
| **0372** | **1** |
| **0376** | **5** |
| **0380** | **9** |

**PRIMARY AREA**

|  |  |  |  |
| --- | --- | --- | --- |
| **1** | **0369** | **Implementation of operating systems** | **8** |
| **2** | **0370** | **Planning and Managing Networks** | **6** |
| **3** | **0371** | **Fundamentals of hardware** | **3** |
| **4** | **0372** | **Database Management** | **6** |
| **5** | **0373** | **Markup Language and Information Systems** | **4** |
| **6** | **0374** | **Operating Systems Administration** | **7** |
| **7** | **0375** | **Network and Internet Services** | **7** |
| **8** | **0376** | **Implementing Web Applications** | **5** |
| **9** | **0377** | **Management management systems of databases** | **3** |
| **10** | **0378** | **Security and high availability** | **5** |
| **11** |  |  |  |
| **12** | **0380** | **Training and Guidance** | **3** |

**OVERFLOW AREA**

|  |  |  |
| --- | --- | --- |
| **0381** | **Business and Entrepreneurial Initiative** | **3** |
|  |  |  |

**Exercise 5:**

**We have the following diagram showing the architecture we use in our classes to teach the database module.**

**Arrange the following software depending on whether it is installed on client or server.**

**S.G.B.D. MySQL**

**Apache Web Server**

**Host Language: PHP**

**Operating system Windows 2008 server**

**Operating System Windows 7 professional**

**GUI graphical access to the database: MySQL Query Browser**

**Web Browser: Internet explorer.**

|  |  |
| --- | --- |
| **SERVER SOFTWARE** | **S.G.B.D. MySQL, Apache Web Server, Operating system Windows 2008 server, Operating System Windows 7 professional,** |
| **CLIENT SOFTWARE** | **Host Language: PHP, Operating system Windows 2008 server, Operating System Windows 7 professional, GUI graphical access to the database: MySQL Query Browser, Web Browser: Internet explorer.** |

**S.G.B.D. MySQL:** It is a data management software which usually resides on the server and performs management of data needed by applications.

**Apache Web Server**: it is a program specially designed for data transfer hypertext, ie, web pages with all elements (text, widgets, banners, etc). The web server, is waiting for a browser will make a request, such as accessing a web page and responds to the request, sending HTML code via a data transfer network.

**Host Language: PHP:** Software development customer-oriented applications.

**Operating system Windows 2008 server:** Software that can be installed on a server machine but can also used by users.

**Operating System Windows 7 professional:** Software that is usually installed on a client machine can be used as server to be an economic solution.

**GUI graphical access to the database: MySQL Query Browser:** He resides client and server, providing the client server connection.

**Web Browser: Internet explorer:** It is a user interface FTP, with operations similar to the Windows Explorer