|  |  |
| --- | --- |
| **Project Case** |  |
| COMP7066  Expert Systems |
| **Computer Science** | **E202-COMP7066-DD01-00** |
| ***Valid on*** *Even Semester Year 2019/2020* | **Revision 00** |

1. Seluruh kelompok tidak diperkenankan untuk:

*The whole group is not allowed to:*

* + 1. Melihat sebagian atau seluruh proyek kelompok lain,

*Seeing a part or the whole project from other groups*

* + 1. Menyadur sebagian maupun seluruh proyek dari buku,

*Adapted a part or the whole project from the book*

* + 1. Mendownload sebagian maupun seluruh proyek dari internet,

*Downloading a part or the whole project from the internet,*

* + 1. Mengerjakan soal yang tidak sesuai dengan tema yang ada di soal proyek,

*Working with another theme which is not in accordance with the existing theme in the matter of the project,*

* + 1. Melakukan tindakan kecurangan lainnya,

*Committing other dishonest actions,*

* + 1. Secara sengaja maupun tidak sengaja melakukan segala tindakan kelalaian yang menyebabkan hasil karyanya berhasil dicontek oleh orang lain / kelompok lain.

*Accidentally or intentionally conduct any failure action that cause the results of the project was copied by someone else / other groups.*

1. Jika kelompok terbukti melakukan tindakan seperti yang dijelaskan butir 1 di atas, maka **nilai kelompok** yang melakukan kecurangan (menyontek maupun dicontek) akan di – **NOL** – kan.

*If the group is proved to the actions described in point 1 above, the score of the group which committed dishonest acts (cheating or being cheated) will be “Zero”*

1. Perhatikan jadwal pengumpulan proyek, segala jenis pengumpulan proyek di luar jadwal tidak dilayani.

*Pay attention to the submission schedule for the project, all kinds of submission outside the project schedule will not be accepted*

1. Jangan lupa untuk melihat kriteria penilaian proyek yang ditempel di papan pengumuman, atau tanya asisten anda.

*Don’t forget to look at the project assessment criteria that posted on the announcement board, or ask your teaching assistant.*

1. Persentase penilaiaan untuk matakuliah ini adalah sebagai berikut:

*Marking percentage for this subject is described as follows:*

|  |  |  |
| --- | --- | --- |
| **Tugas Mandiri**  *Assignment* | **Proyek**  *Project* | **UAP**  *Final Exam* |
| 40% | 60% | - |

1. Software yang digunakan pada matakuliah ini adalah sebagai berikut:

*Software will be used in this subject are described as follows:*

|  |
| --- |
| **Software**  *Software* |
| Java 8  Eclipse Neon 2 with JESS 71p2 |

1. Ekstensi file yang harus disertakan dalam pengumpulan tugas mandiri dan proyek untuk matakuliah ini adalah sebagai berikut:

*File extensions should be included in assignment and project collection for this subject are described as follows:*

|  |  |
| --- | --- |
| **Tugas Mandiri**  *Assignment* | **Proyek**  *Project* |
| CLP | Folder Project (JAVA, CLP, CLASSPATH, FATJAR, PROJECT, JAR, PREFS, CLASS) |

## Soal

*Case*

**Aeroff**

**Aeroff** is an aircraft company which manufactures in creating high-quality airplane and helicopter. As time goes by, the customer of **Aeroff** is increasing. Because of that, sales are growing rapidly each day. As a programmer, you are asked to build an application that can give an expert solution for helping **Aeroff** in dealing with the demand of the customer. Here are the descriptions of the application:

The application consists of **6 main menus**. There are:

1. **View Aircraft**
2. **Add a new Aircraft**
3. **Update Aircraft Detail**
4. **Delete Aircraft**
5. **Search Match**
6. **Exit**

Then, the application will ask the user to input the choice. Validate the choice must be **numeric** and **between 1 and 6.**

A close up of a logo

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Figure 1. Main Menu

* If the user chooses the menu 1 “**View Aircraft**”, then:

1. The application will show the **type of aircraft to be viewed** and ask the user to **input the choice**. Validate the choice must be **numeric** and **between 1 and 2.** Input **0** to **back to the main menu.**

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Figure 2. View Aircraft Menu

1. If the user chooses the **submenu 1 (“Airplane”)**, then the application will **show all airplane facts.**

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Figure 3. Airplane Facts

1. If the user chooses the **submenu 2 (“Helicopter”)**, then the application will **show all sofa facts.**

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Description automatically generated

Figure 4. Helicopter Facts

1. Then, the application will go **back** to the **main menu.**

* If the user chooses the menu 2 “**Add a new Aircraft**”, then:

1. The application will show the **type of aircraft to be added** and ask the user to **input the choice**. Validate the choice must be **numeric** and **between 1 and 2.** Input **0** to **back to the main menu.**

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Figure 5. Add Aircraft Menu

1. If the user chooses the **submenu 1** (“**Airplane**”), then:
   1. The application will ask the user to **input** the **aircraft** **name**. Validate the **length** of the aircraft name must be **between 5 and 25 characters.**
   2. The application will ask the user to **input** the **aircraft** **material**. Validate the aircraft material **(case sensitive)** must be **between “Titanium”, “Aluminum”, or “Graphite”.**
   3. The application will ask the user to **input** the **engine** **type**. Validate the engine type **(case sensitive)** must be **between “Jet” or “Piston”.**
   4. The application will ask the user to **input** the **aircraft** **color**. Validate the aircraft color **(case sensitive)** must be **between “Black”, “Blue” or “White”.**
   5. The application will ask the user to **input** the **fuel** **type**. Validate the fuel type **(case sensitive)** must be between **“Biofuel”, “Jet Fuel” or “Avgas”.**
   6. The application will ask the user to **input** the **aircraft** **price**. Validate the aircraft price must be **numeric** and **between 100000 and 1000000.**
   7. After that, the application will **insert** the **data** into the **airplane facts.**

A screen shot of a social media post

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Figure 6. Insert Airplane Facts

1. If the user chooses the **submenu 2** (“**Helicopter**”), then:
   1. The application will ask the user to **input** the **aircraft** **name**. Validate the **length** of the aircraft name must be **between 5 and 25 characters.**
   2. The application will ask the user to **input** the **aircraft** **material**. Validate the aircraft material **(case sensitive)** must be **between “Titanium”, “Aluminum”, or “Graphite”.**
   3. The application will ask the user to **input** the **aircraft** **color**. Validate the aircraft color **(case sensitive)** must be **between “Black”, “Blue” or “White”.**
   4. The application will ask the user to **input** the **fuel** **type**. Validate the fuel type **(case sensitive)** must be between **“Biofuel”, “Jet Fuel” or “Avgas”.**
   5. The application will ask the user to **input** the **aircraft** **price**. Validate the aircraft price must be **numeric** and **between 100000 and 1000000.**
   6. After that, the application will **insert** the **data** into the **airplane facts.**

A picture containing indoor

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Figure 7. Insert Helicopter Facts

1. Then, the application will go **back** to the **main menu**.

* If the user chooses the menu 3 “**Update Aircraft Detail**”, then:

1. The application will show the **type of aircraft to be updated** and ask the user to **input the choice**. Validate the choice must be **numeric** and **between 1 and 2.** Input **0** to **back to the main menu.**

A close up of a logo

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Figure 8. Update Aircraft Detail Menu

1. If the user chooses the **submenu 1 (“Airplane”)**, then:
   1. The application will **show** all **airplane** **facts** and ask the user to **input** the **index** of the item to be **updated**. Validate the **input** must be **numeric** and **between 1** and the **latest number of facts.**
   2. The application will ask the user to **input** the **aircraft** **name**. Validate the **length** of the aircraft name must be **between 5 and 25 characters.**
   3. The application will ask the user to **input** the **aircraft** **material**. Validate the aircraft material **(case sensitive)** must be **between “Titanium”, “Aluminum”, or “Graphite”.**
   4. The application will ask the user to **input** the **engine** **type**. Validate the engine type **(case sensitive)** must be **between “Jet” or “Piston”.**
   5. The application will ask the user to **input** the **aircraft** **color**. Validate the aircraft color **(case sensitive)** must be **between “Black”, “Blue” or “White”.**
   6. The application will ask the user to **input** the **fuel** **type**. Validate the fuel type **(case sensitive)** must be between **“Biofuel”, “Jet Fuel” or “Avgas”.**
   7. The application will ask the user to **input** the **aircraft** **price**. Validate the aircraft price must be **numeric** and **between 100000 and 1000000.**
   8. After that, the application will **update** the **data** based on the **inputted index** into the **airplane facts.**

A screenshot of a cell phone

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Figure 9. Update Airplane Facts

1. If the user chooses the **submenu 2 (“Helicopter”)**, then:
2. The application will **show** all **helicopter** **facts** and ask the user to **input** the **index** of the item to be **updated**. Validate the **input** must be **numeric** and **between 1** and the **latest number of facts.**
3. The application will ask the user to **input** the **aircraft** **name**. Validate the length of the aircraft name must be **between 5 and 25 characters.**
4. The application will ask the user to **input** the **aircraft** **material**. Validate the aircraft material **(case sensitive)** must be **between “Titanium”, “Aluminum”, or “Graphite”.**
5. The application will ask the user to **input** the **aircraft** **color**. Validate the aircraft color **(case sensitive)** must be **between “Black”, “Blue” or “White”.**
6. The application will ask the user to **input** the **fuel** **type**. Validate the fuel type **(case sensitive)** must be **between “Biofuel”, “Jet Fuel” or “Avgas”.**
7. The application will ask the user to **input** the **aircraft** **price**. Validate the aircraft price must be **numeric** and **between 100000 and 1000000.**
8. After that, the application will **update** the **data** based on the **inputted index** into the **helicopter facts.**

A screenshot of a cell phone

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Figure 10. Update Helicopter Facts

1. Then, the application will go **back** to the **main menu.**

* If the user chooses the menu 4 “**Delete Aircraft**”, then:

1. The application will show the **type of aircraft to be deleted** and ask the user to **input the choice**. Validate the choice must be **numeric** and **between 1 and 2.** Input **0** to **back to the main menu**.

A close up of a logo

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Figure 11. Delete Aircraft Menu

1. If the user chooses the **submenu 1 (“Airplane”)**, then:
2. The application will **show** all **airplane** **facts** and ask the user to **input** the **index** of the item to be **deleted**. Validate the **input** must be **numeric** and **between 1** and the **latest number of facts**.
3. Then, the application will **delete** **data** based on the **inputted** **item** **number** to be deleted.

A screenshot of a cell phone

Description automatically generated

Figure 12. Delete Airplane Facts

1. If the user chooses the **submenu 2 (“Helicopter”)**, then:
2. The application will **show** all **helicopter** **facts** and ask the user to **input** the **index** of the item to be **deleted**. Validate the **input** must be **numeric** and **between** **1** and the **latest** **number of facts.**
3. Then, the application will **delete** **data** based on the **inputted item number** to be deleted.

A screenshot of a social media post

Description automatically generated

Figure 13. Delete Helicopter Facts

1. Then, the application will go **back** to the **main menu**.

* If the user chooses the menu 5 “**Search Match**”, then:

1. The application will ask the user to **input** **usernames**. Validate the **length** of the aircraft name must be **between 3 and 20 characters**.
2. The application will ask the user to **input** the **demanded aircraft**. Validate the demanded aircraft **(case sensitive)** must be **between “Airplane” or “Helicopter”.**
3. The application will ask the user to **input** the **demanded material type**. Validate the demanded material type **(case sensitive)** must be **between “Titanium”, “Aluminum” or “Graphite”.**
4. If the demanded aircraft is “**Airplane**”, then:
   1. The application will ask the user to **input** the **demanded engine type**. Validate the demanded material type **(case sensitive)** must be **between “Titanium”, “Aluminum” or “Graphite”.**

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Figure 14. Search Aircraft

1. Then, the application will **search** the **corresponding** **item** with these **following** **conditions**:
   1. If the demanded aircraft is “**Airplane**” and the engine type is “**Jet**”, then display the only airplanewith the **engine type** of “**Jet**”.
   2. If the demanded aircraft is “**Airplane**” and the engine type is “**Piston**”, then display only airplanewith the **engine type** of “**Piston**”.
   3. If the demanded aircraft is “**Helicopter**”, then **display** only the **helicopter** **facts**.
   4. The **budget** must be **greater than** or **equals** to the **price** of the **airplane** or **helicopter**.
   5. The application will **show** the **result of consultation** in the **GUI** (**Graphical User Interface**) view.
   6. If there is **any** **result** **matching**, then **display** **all** the **matching** **data**.

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Figure 15. Search Aircraft with Result

* 1. Otherwise, **notify** the user that **no result has been matched.**

A screenshot of a social media post

Description automatically generated

Figure 16. Search Aircraft without Result

* 1. Then, **return** to the **main menu.**
* If the user chooses the menu 6 “**Exit**”, then the **application** will **exit**.
* These following **facts** must be **included** when the **application** **started**:
  + **Airplane Facts**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Material** | **Engine Type** | **Color** | **Fuel** | **Price** |
| Hawker Horizon 4000 | Titanium | Jet | Black | Biofuel | 750000 |
| Fairchild 300 | Aluminum | Jet | Black | Jet Fuel | 600000 |
| 210R Centurion | Aluminum | Piston | White | Avgas | 300000 |
| Eclipse DA20-C1 | Titanium | Piston | Blue | Avgas | 400000 |
| Eurofox | Graphite | Piston | White | Avgas | 350000 |

* + **Helicopter Facts**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Material** | **Color** | **Fuel** | **Price** |
| F28F Falcon | Aluminum | Blue | Avgas | 400000 |
| 280F Shark | Graphite | Black | Biofuel | 650000 |
| R22 Alpha Beta | Aluminum | Blue | Avgas | 200000 |
| R22 Mariner | Titanium | White | Avgas | 350000 |
| S-76 Spirit | Graphite | White | Avgas | 500000 |

Here are the rules that you must follow to create your project:

1. Use appropriate software for this subject based on **Sistem Praktikum** that can be downloaded from Binusmaya.
2. Use the techniques taught during practicum, such as: building facts (facts, assert, modify, retract, deffact, deftemplate), building rule (defrule), knowledge representation (forward chaining, backward chaining), and building expert system.
3. Collect appropriate files for this subject based on **Sistem Praktikum** that can be downloaded from Binusmaya.
4. Include the other files that can support your project, such as:
   1. All files in your project
   2. Other files (image, audio, video, etc.) used in your project
   3. \*.DOC file (documentation of your project) that contains the reference links of additional files (image, audio, video, etc.) used in your project

**If you have any question, please ask your assistant!**