**Standard Message Formatting and Error Handling Techniques**

**Standard Message Format**

The Message to be used for scheduling is expected to be in a given standard format. The message format takes two shapes depending on the choice of the user; whether the user wants to give a time range within which the lab should be scheduled for, or if the user gives a fixed start time range, at which the system provides the end time range.

The message is formatted as shown below;

1. When the user provides a time range when the lab should be done

“**Username Labname Date StartTimeRange EndTimeRange**”

1. When the user only provides a Start time range to do the lab and does not provide the end time range

“**Username Labname Date StartTimeRange**”

As mentioned earlier, the system in this case will provide an end time range which in this case is 4 hours from the start time range

The message contains various values (words) that are separated by space. Therefore the Scheduling application uses the space to pick out the user elements. Below is a table that shows the function of each of these elements.

|  |  |  |
| --- | --- | --- |
| **Element value** | **Description and Function** | **Format** |
| **Username** | The username of the student as used by the student while registering with the iLabs Service Broker.  Used to attach the scheduling session made with the username | * Should be similar to the username used for registering the user * Should have no spaces in between |
| **Labname** | The name of the lab the user is requesting to schedule and experiment for.  This is defined by the administrator the lab that is to be done and can be an acronym for the real lab to be done  Specifies the lab that the student is willing to schedule for | * Should have no spaces in between. * Should be similar to the name specified by the administrator |
| **Date** | The date that the user wishes to do the lab  Specifies the date when the user wants to do the lab | * The date should not have passed. * Should be of the format “DD/MM/YYYY where DD is date MM is Month and YYYY is year. * The day, month and year should be separated by either ‘**/**’, or ‘**-**‘, or ‘**.**’. * Should not contain any spaces |
| **StartTimeRange** | (Start Time Range) the time for the range within which the student would like the lab to be scheduled. | * The Start Time given should not have passed. * It should not be after the End time Range provided * It should be of the format “HH:MM” where the HH is the hour and MM is the minute. * The hour and the minutes should be separated by either ‘**:**’ or ‘**;**’. * It should not have any spaces in between. |
| **EndTimeRange** | (End Time Range) this is an optional element that defines the user sets to give the end of the time range within which the lab can be scheduled.  If not provided, the scheduling application adds 4 hours from the start time range provided | * The End Time given should not have passed. * It should not be before the End time Range provided. * It should be of the format “HH:MM” where the HH is the hour and MM is the minute. * The hour and the minutes should be separated by either ‘**:**’ or ‘**;**’. * It should not have any spaces in between. |

Much as the format of the scheduling message has been set, users are prone to make errors as they try to make these errors. Some error techniques have been put across so as to minimize such errors. These techniques are explained in the next section.

**Error Handling Techniques**

The main technique used in dealing with errors is giving the feedback of the error message to the user. The feedback provided shows the particular error created and the possible correction that can be made to avoid this error.

The table below shows the possible errors that the user can make while attempting to use the application and the possible correction given by the system to correct the error.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO.** | **Error Name** | **Error Code** | **Cause and Description** | **Possible Solution** |
| **1.** | **Message Format Error** | MFE01 | Message sent by the user is not formatted as the default description earlier explained.  Checked by the number of elements (blocks or words) in the message and occurs if the they are less than 2 or more than 5. | Format the message to the standard scheduling format earlier provided |
| **2.** | **User authentication failure** | SBE01 | The username provided has not been registered by the in the service broker that holds the lab being scheduled. | user should provide an appropriate username that has already been registered for and has a group that is required to do the lab.  User should also check and ensure that the username provided is the second element provided after the ‘ilab’ keyword |
| **3.** | **User unavailable in lab Group** | SBE02 | The username provided is present in the service broker database but is not a member of the group authorized to do the lab | User should contact administrator requesting for membership for the lab responsible to do the lab. |
| **4.** | **Labname unavailable** | LRU01 | The labname or labname acronym given by the user does not belong to any lab that supports this scheduling system | User should provide a labname that supports the scheduling system. The system also replies with available labs that the sms scheduling system supports |
| **5.** | **Wrong Start Date Time Format** | SDT01 | The Start Time Range requested by the user is wrongly formatted | User should ensure that the format given by the message scheduling is standard. The feedback to the message contains this feedback |
| **6.** | **Start DateTime outdated** | SDT02 | The Start Time Range is already past | User should provide a future date and time. The feedback to the user contains the message format incase. |
| **8.** | **Wrong End Date Time Format** | EDT01 | The End Time Range requested by the user is wrongly formatted | User should ensure that the format given by the message scheduling is standard. The feedback to the message contains this feedback |
| **9.** | **End DateTime outdated** | EDT02 | The End Time Range is already past | User should provide a future date and time. The feedback to the user contains the message format incase. |
| **10.** | **Negative Time Range\*** | SDT00 | When the Start time Range provided is later than the End Time Range provided | User specifies an End Time Range that is After the Start Time Range. |
| **11.** | **Small Time Range\*** | STR01 | When the time Range provided by doing the lab is much smaller than the actual minimum time required by the user to do a lab as specified by the administrator | User provides a time Range that is greater than the minimum time provided. The reply to the user is provided with the minimum and maximum time duration for the lab |
| **12.** | **Database Connection Failure** | DBF01 | Internal Error when the application fails to connect to the database to retrieve the required values for scheduling the user into the system | Administrator to troubleshoot the connection failure. Inform the user of the error |
| **13.** | **Default Error** | DEF00 | This is the default error when the application cannot resolve the possible cause of the error | User is informed that much as the message has been well formatted, the error has occurred and cannot be resolved.  Administrator in charge of troubleshooting the error. |