Software Engineering

Context Diagram

Start_system

Select Device

Select Tariff

Select Start Time

Select End Time

Add to Estimate

Calculate Estimate

Generate Graphs

Clear All

Remove Device

Graph

Cost Estimate

Total Power Estimate
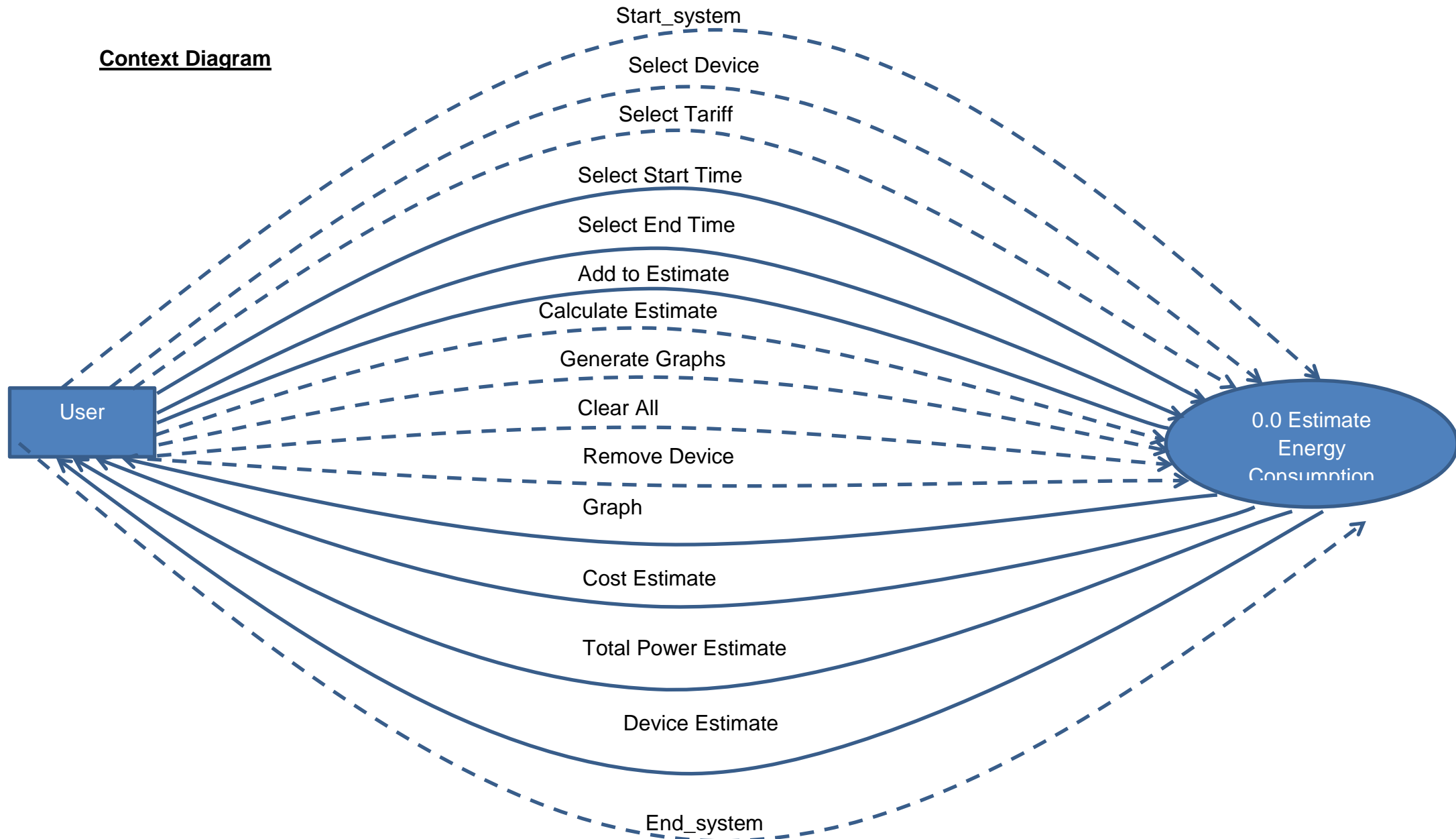
Device Estimate

End_system

User

0.0 Estimate Energy Consumption

Data Dictionary

Start_system   =   /* Launches the system.

Select_device   =   {Device Name, Power_value}10

Select_tariff   =   {Price}2

Select_start_time   =   /* Select time device was turned on, type double

Selec_end_time   =   /* Select time device was turned off, type double

Add_to_estimate   =   /* Saves all values: price, time and power

Generate_graph   =   /* Generates graph

Clea_all   =   /* Resets all fields and values

Remove_device   =   /* Remove device from estimate

Graph   =   /* Displays graph to user

Total_cost   =   /* Requests calculation

Total_power   =   /* Requests calculation

Device_power   =   /* Power used by device, type double

Device_name   =   /* Name of device, type string

Price   =   /* Price of tariff, type double

End_system   =   /* Stops the system

Data Flow Diagram
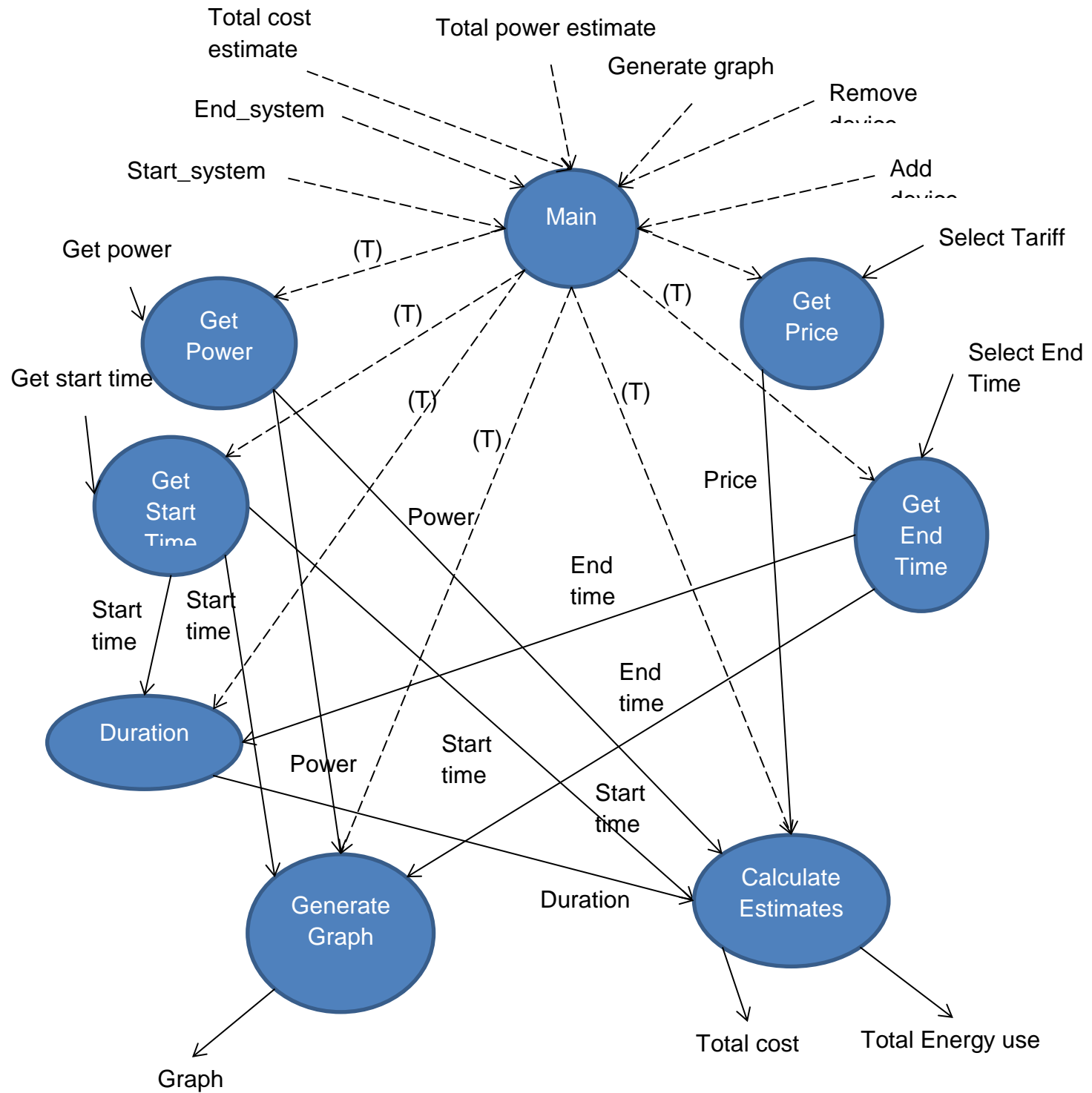
Pseudo-Code

Get Power Alias: SelectDevice_SelectedIndexChanged Input: None Power from Power_txt Output: Power
Get Price Alias: SelecTariff_SelectedIndexChanged Input: None Price from hardcoded values Output: Price
Get Start Time Alias: StartTime_SelectedIndexChanged Input: None Start time from StartTime Output: Start time
Get End Time Alias: EndTime_SelectedIndexChanged Input: None End time from EndTime Output: End time
Calculate Duration Alias: Add_Device_btn_btn_Click Input: Start time, End Time Duration = End time – Start Time

Output: None

<u>Calculate Total Cost</u>
Alias: Calculate_btn_Click
Input: Price, Power, Duration
Cost of each device = Price * Power * Duration
Total cost = sum of all devices
Output: None

<u>Calculate Total Energy</u>
Alias: Calculate_btn_Click
Input: Power, Duration
energy of each device = Power * Duration
Total energy = sum of all energy
Output: None

<u>Generate Graph</u>
Alias: Generate_Graph_btn_Click
Input: Power, start time, end time
Plot points (start time, power) and (end time, power)
Output: None

User Experience Design

The way in which the form is displayed to the user is paramount to the end experience. There should be some sort of logical flow, guiding the user through the experience. Left-to-right and top to bottom are how most, if not all, of the end users of this software will naturally read. It is therefore important that the information and inputs are laid out in this particular fashion to try and reduce or eliminate any confusion.

Initially, the intention for the user interface was it to be mostly from top to bottom. This, however, meant that the x-axis of the graph did not display any values, which is detrimental to the end experience.
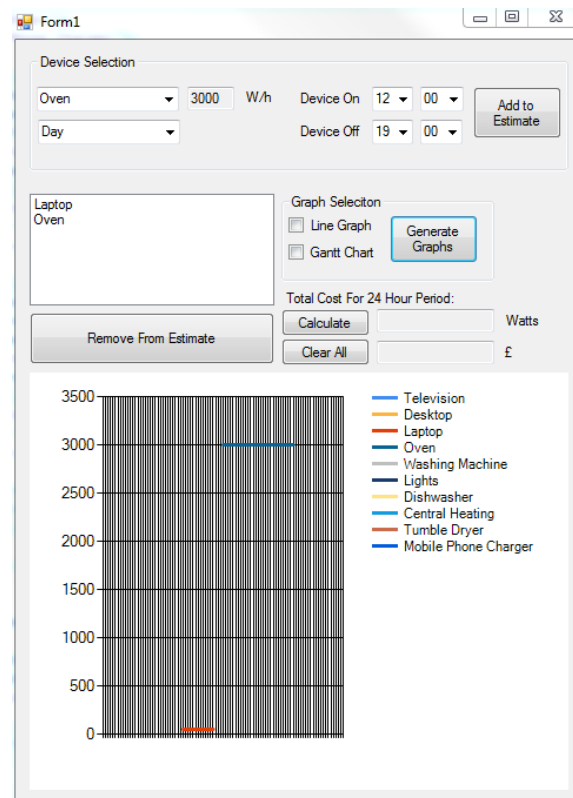
This was then revised to a more left-to-right approach so values were readable for the user, allowing them to easy determine the start and end values for each appliance.