**Figure 7-1 – Possible System Entities**

Product: <Enumeration Mathematical Library>

Date: <02/23/2016>

| Type | Name | Description or Notes |
|---|---|---|
| Screen | Website | Our website enumeration.ml for hosting our software |
| Database | Graphic Base | Our database of mathematical basic graphics |
| Database | Number Base | Database of important mathematical numbers and formulas |
| File | Makefile | For compiling and building software |
| File | num.c | Common number theoretic functions are in this file |
| File | alg.c | Algebraic number theory structures and functions are located in this file |
| File | combi.c | Combinatorial structures and functions are located in this file |
| File | field.c | Field types and operations are located in this file |
| File | arb.c | Arbitrary precision numbers type and operations are located in this file |
| File | graphic.c | For Graphics Rendrings |
| File | num.h | Header file for num.c |
| File | alg.h | Header file for alg.c |
| File | combi.h | Header file for combi.c |
| File | field.h | Header file for field.c |
| File | arb.h | Header file for arb.c |
| File | graphic.h | Header file for graphic.c |
| File | math.s | Fast math functions in assembly language |
| File | operation.s | Fast math operations in assembly language |
| File | Function.s | Optimized functions in assembly language |
| File | eml.tar.gz | Standart Archive distribution of software |
| File | eml.so | Dynamically Linked Library Version |
| File | eml.a | Statically Linked Library Version |
| Module | C++ Bindings | Bindings for C++ Programming Language |
| Module | Python Bindings | Bindings for Python Programming Language |
| Module | Haskell Bindings | Bindings for Haskell Programming Language |
| Module | Java Bindings | Bindings for Java Programming Language |
| Code | Tex Renderer | Tex Renderings |
| Code | PNG Renderer | PNG Renderings |

## Figure 7-2 – Template for Detailed Design for a Screen

CI102-Lab7(1)
**Name**: <Website (enumeration.ml)>

**Type**: Screen

**Purpose**: This screen is needed to meet requirement 1 of Software Distribution

**Description**: Figure <1> shows the layout for this screen. This screen is the first webpage of our website which we intend to use for our software distribution and propagation.

The screen contains the webpage hierarchy.

Layout:

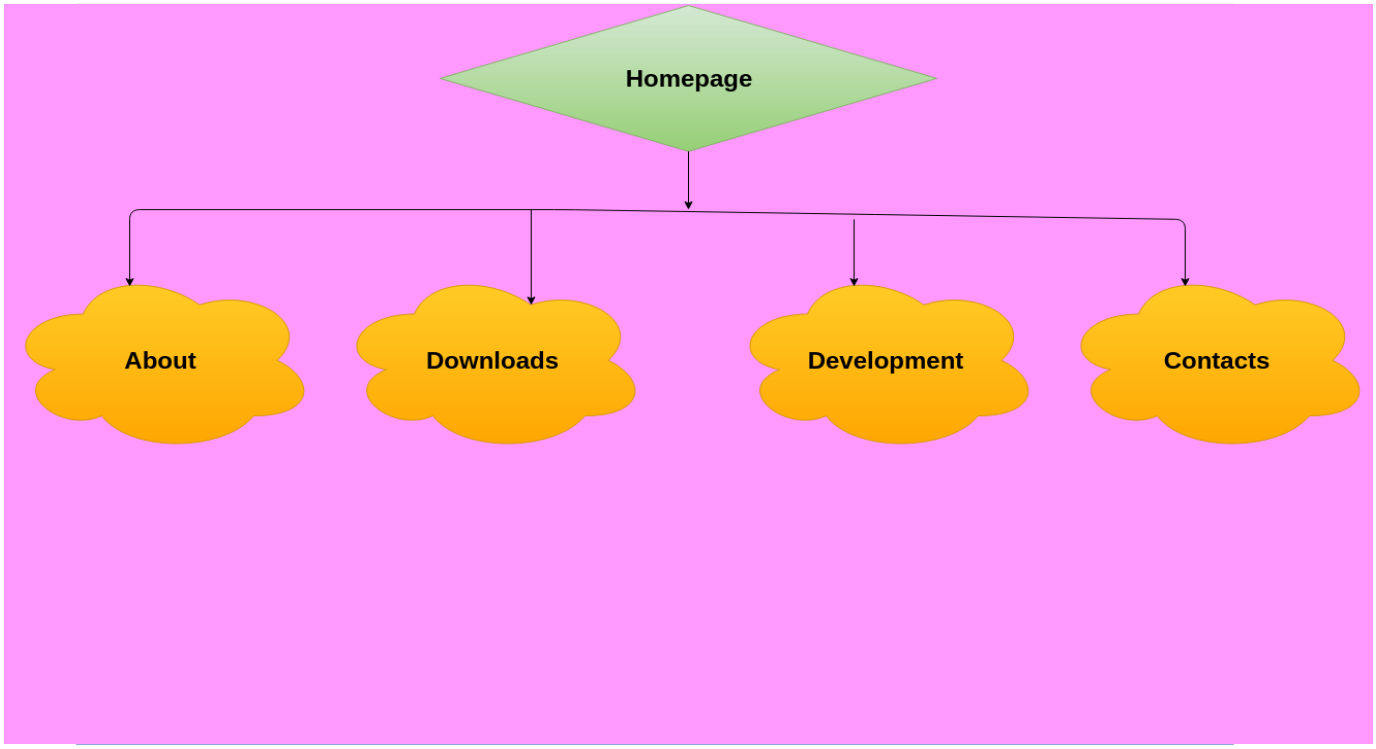


**Figure <1> - <Website> Screen**

## Figure 7-3 – Template for Detailed Design for a Database Table

**Name**: <Number Base>

**Type**: Database Table

**Purpose**: This table is needed to meet requirement 10.

**Description**: Figure <2> shows the contents for this table. This table contains information about what our database will typically store. One row of this table represents a number important in some mathematical sense.

**Table Contents:**

| Data Element Name | Data Type | Key | Notes |
|---|---|---|---|
| Pi | arb_double | 1 | This is number Pi computed upto any precision. |
| e | arb_double | 2 | This is number e computed upto any precision. |
| Euler's Constant | arb_double | 3 | This is number Euler's constant computed upto any precision. |
| The Golden ratio | arb_double | 4 | This is number golden ratio computed upto any precision. |
| Glaisher–Kinkelin constant *A* | arb_double | 5 | This is number Glaisher–Kinkelin constant *A* computed upto any precision. |
| i | arb_complex | 6 | Complex unit upto arbitrary precision |
| Sqrt (x) | arb_func | 7 | Arbitrary precision functions |
| Complex Integrals | arb_integral | 8 | Arbitrary precision integrals |
| Prime Sieve | arb_array | 9 | Array of prime numbers |
| Field1 | arb_field | 10 | Hilbert fields |
| pFields | arb_field | 11 | P-adic Fields |

**Figure <2> - <Number Base> Database Table**

## Figure 7-4 – Template for Detailed Design for a Code Function

**Name**: <Tex Renderer>

**Type**: Function

**Purpose**: This function is needed to meet requirement 17.

**Parameters**:  The following parameters are used to call this function:

| Name | Data Type | Notes |
|---|---|---|
| data | Any arb datatype | Structure to be Tex rendered |
| width | double | Relative width to standard width |
| height | double | Relative width to standard height |

**Return Type**: <int>

**Processing:**  Takes a arb datatype data structure and output a Tex file to represent it. Variables width and height are taken into account while generating the  Tex output. This program takes call tex-generator open source library.