Ax paper task – report

1. Requirements

- The program should ask user to enter a number paper size
- User can enter anything, but accepted values range from 1 to 1000
- User input must be numbers
- The string asking the user what size paper they want must be “Which size do you want to calculate?\nA”
- The output must be formatted as “A paper of size Ax is x by y mm”
- The program must use one or more loops
- The program must follow the flow

2. Design

I decided to split everything in to separate functions to improve readability.

I also wrote some verification functions as to check the validity of the input and get the length.

I am aware that there exist libraries to do some of the stuff that my functions do, I did however feel that that it was to inappropriate to use libraries in a skill assessment situation.

Pseudo code:

```
Main():
        Print  “Which size do you want to calculate?\nA”
        User inputs What size they want
        Checks that user input is number with the “StringToInt” function
        If it is a number then store the value returned by the function
        Else print error and go to the top again
        Compute the size of the Ax paper using the “CalulateAxSize” function
        Go back to the top again
```

```
CalulateAxSize ( takes default size and difference in size from A4):
    Size = {210, 297} (Size of A4)
    If we want an Ax paper where x is smaller than 4
        For(i = 0; i < 4-x; ++i)
            Swap places of the paper height and width
            Double the height of the paper
    Else
        For ( i = 0; i < x-4 ; ++i)
            Swap places of the height and width
            Half the width of the paper
    Sizex = (int)width if width >=1 else width
    Sizey = (int)height if height >=1 else height
    Print the output string
// this is a function I wrote to convert strings to numbers
StringToInt ( takes a string to be converted):
    Check that the string is a number;
    Check that the string is in the length limit;
    Get every characters representative integer value using ascii and multiply it
    By 10 to the power of the string length – its index;
    Return the number
```

3. Testing

I ran my code against some test inputs to see that everything functioned properly. These are some of the inputs I tried.

I used http://resources.printhandbook.com/pages/paper-size-chart.php to verify my outputs. They differ at some points by 1 millimeter and Sandeep has said that that is ok.

Test input	Output
4	A paper of size A4 is 210 by 297 mm
ABCD	You must enter a number
1234	You must enter a value smaller or equal to 1000
12345	You must enter a number "shorter" than 10000
2	A paper of size A2 is 420 by 594 mm
6	A paper of size A6 is 105 by 148 mm
-1	You must enter a positive integer
1000	A paper of size A1000 is 2.56615e-148 by 3.62926e-148 mm

4. Problems and solutions

During testing I struggled with finding an efficient way of verifying that a string is numerical. I did however find a rather nice way of doing it using the ASCII values of the characters. (Link to the ascii table http://www.asciitable.com/)

I also struggled a bit with the proper way of printing the values, I first thought that we were to use integers but that would be problematic after A19. The solution was to use long doubles and then format the string with %g

5. Conclusions

My takeaway from this is that google has a lot of resources, but they are more limited for c than other programming languages. I can also say that there are some hoops that you must jump through when writing c code that are nonexistent in other languages.

I learned that c has an easy way to compare text to ascii.