From last time

How is a bit used to represent a simple decision, like the answer to “Is this question hard”? (1 mark)

A bit can hold 2 different values: 0 & 1
e.g. let 0 represent “no” and 1 represent “yes”

Without using a calculator, and briefly explaining how you do it, convert the decimal number 97 to binary, and then from binary to octal and to hexadecimal. (3 marks)

Repeatedly divide by 2: 97/2=48r1, 48/2=24r0, 24/2=12r0, 12/2=6r0, 6/2=3r0, 3/2=1r1, 1/2=0r1
and collect remainders right-to-left: 11000012
octal: group in 3s (001 100 001) convert each group to digit (0-7) (e.g. 1002 = 48): 1418
hex: in 4s (0110 0001) to digit (0-9A-F) (e.g. 10102 = A16): 6116
## Questions

<table>
<thead>
<tr>
<th>byte 23</th>
<th>byte 22</th>
<th>byte 21</th>
<th>byte 20</th>
<th>word 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x87</td>
<td>0x65</td>
<td>0x43</td>
<td>0x21</td>
<td></td>
</tr>
</tbody>
</table>

Q: what is in Register 0 after: \texttt{LDRB R0, 22}  

| 0x00    | 0x00    | 0x00    | 0x65    |

Q: then what is in word 20 after: \texttt{STRB R0, 21}  

| 0x87    | 0x65    | 0x65    | 0x21    |
Question

At what address does this program start execution? When it stops, what values are in R0 to R4 (state whether decimal, hex etc.)
Start address = 0x1104 (hex)
R0 = 0x100001 (hex)
R1 = 0x1000 (hex)
R2 = 0xFFFFFFFF (hex)
R3 = @10 (octal – i.e. decimal 8)
R4 = 0x1010 (hex)