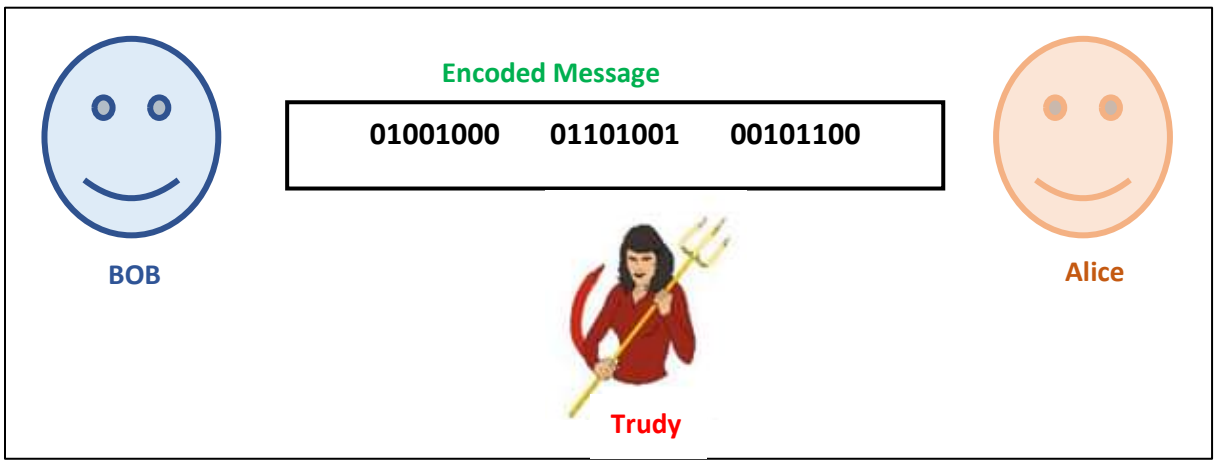
# CS101 Assignment Solved by Abdul Hadi E Services

Get Paid Assignment click

**Questions No. 01** **Marks (12)**

Alice and Bob are playing a game by encoding their messages in an 8-bit binary. Trudy wants to understand or modify their messages. You have to help Trudy to convert encoded messages into a readable format by performing the following operations.




- Note: Perform all the required steps in detail for each operation.

(a) Convert the above 8-digit binary numbers into decimals. (6 marks)
(b) Convert the 8-digit binary into hexadecimal. (3 marks)
(c) Decode the 8-digit binary in textual form. (Hint: using the ASCII table). (3 marks)

## Solution:

(a) Convert the above 8-digit binary numbers into decimals. (6 marks)

| | $2^7$ | $2^6$ | $2^5$ | $2^4$ | $2^3$ | $2^2$ | $2^1$ | $2^0$ | |
|---|---|---|---|---|---|---|---|---|---|
| **Q** | **128** | **64** | **32** | **16** | **8** | **4** | **2** | **1** | |
| **1** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **0** | **Ans** |
| | 0+ | 64+ | 0+ | 0 | 8+ | 0+ | 0+ | 0 | **72** |
| **Q** | **0** | **1** | **1** | **0** | **1** | **0** | **0** | **1** | **Ans** |
| **2** | 0 | 64+ | 32+ | 0+ | 8+ | 0+ | 0+ | 1 | **105** |
| **Q** | **0** | **0** | **1** | **0** | **1** | **1** | **0** | **0** | **Ans** |
| **3** | 0+ | 0+ | 32+ | 0+ | 8+ | 4+ | 0+ | 0+ | **44** |

**(b)** Convert the 8-digit binary into hexadecimal. (3 marks)

**01001000** $\begin{Bmatrix}\mathbf{0100 = 4}\\ \mathbf{1000 = 8}\end{Bmatrix} = \mathbf{48}$

**01101001** $\begin{Bmatrix}\mathbf{0110 = 6}\\ \mathbf{1001 = 9}\end{Bmatrix} = \mathbf{69}$

**00101100** $\begin{Bmatrix}\mathbf{0010 = 2}\\ \mathbf{1100 = C}\end{Bmatrix} = \mathbf{2C}$

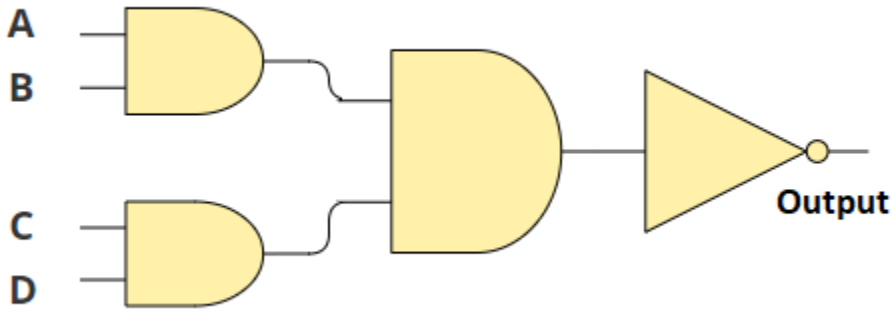
(c ) Decode the 8-digit binary in textual form. (Hint: using the ASCII table). (3 marks)

| **Binary** | **Step 1 (Decimal)** | **ASCII Code** |
|---|---|---|
| 01001000 | 72 | H |
| 01001000 | 105 | i |
| 00101100 | 44 | , |

**Questions No 02** **Marks (04)**

Abdul Hadi E Services

The diagram below shows a circuit with four gates and four inputs (A, B, C and D).




If the final output is 0, what are the possible states of inputs A, B, C and D?

| | |
|---|---|
| A | 1 |
| B | 1 |
| C | 1 |
| D | 1 |

**Questions No. 03** **Marks (04)**

The following table lists the extensions of some file formats used by the website of "Virtual University of Pakistan". Match each extension to an example of data that it can store:

| Extension | Example | Answer |
|---|---|---|
| .mp3 | The logo of the Virtual University of Pakistan | The audio tracks of programming talk-throughs. |
| .zip | The photo of the Rector on the faculty page. | A compressed folder of admission documents. |
| .gif | The audio tracks of programming talk-throughs. | The logo of the Virtual University of Pakistan |
| .jpeg | A compressed folder of admission documents. | The photo of the Rector on the faculty page. |

Abdul Hadi E Services