**Computer Architecture Video Lectures by Dr. Abdul Haseeb Malik**

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|  | **Topics** | **Video Link** |
| 1 | MIPS Arithmetic Instructions | <https://drive.google.com/open?id=1gpNlMuwn5Q1wp24-770IQ88XIfdGrf06&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 2 | Memory Operands | <https://drive.google.com/open?id=1kTCh4td8C8a89n4fsCqAFuOprxpzVi3k&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 3 | Instruction Formats | <https://drive.google.com/open?id=1uT4Zb9YPo7U9rswZzAb8Ke1WcCMUoh2R&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 4 | Control Instructions | <https://drive.google.com/open?id=1XwgjMCS3_IidFXAFSvTJFzeGoV-IUM0j&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 5 | While Example | <https://drive.google.com/open?id=1hFW9UsecMyPUAwZhYHu-KpQ6nf5BURUF&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 6 | Memory Organization Process | <https://drive.google.com/open?id=1Dn41zBYuI697EE-s-p6V9vSHhabLcWFN&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 7 | Overview Procedures | <https://drive.google.com/open?id=1cvVQGcSgVUL32JQUK3VAtjYMx8vuiSzu&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 8 | Procedure Calls | <https://drive.google.com/open?id=18k_fAk4_UlHCKGJ4xBPSVKS6zdbrlpeG&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 9 | Leaf Example1 | <https://drive.google.com/open?id=1PCqV5qQMG2v1Fo1ZCjU2BFr_aMaAG54S&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 10 | Leaf Example2 | <https://drive.google.com/open?id=1WjiC2rF7hSyTeOAcgZIaQberffbXH7VY&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 11 | Difference Registers | <https://drive.google.com/open?id=15rpnSiJiRUAkcJk8GDtE7-TRFBiWMzJO&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 12 | Factorial PreRecorded | <https://drive.google.com/open?id=1Bdk3BNOQQ_PHGb5Gmek6W23D8gRQMGSf&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 13 | Revising MIPS | <https://drive.google.com/open?id=1EOk3dcxQLxFdB4pm4axyMUy8u3ZdjkKn&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 14 | Revising MIPs2 | <https://drive.google.com/open?id=1HNoRJw21tq2rq_egdG9ibNAMdk_Effjc&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 15 | Slt Instruction | <https://drive.google.com/open?id=1B_GhFIgV_l7rio89P4jD-nOhriGFK_KF&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 16 | Factorial Example1 | <https://drive.google.com/open?id=1uwUmbh-hjJxloRkd9S1BIMAYapFlAZje&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 17 | Factorial Example2 | <https://drive.google.com/open?id=1yEqpfCljrsFwu0VSRLeazqA5RUfj9JpJ&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 18 | Revision | <https://drive.google.com/open?id=1LSPwhxpzjlGptSZ_Tu0xKKPbOmhHU7IM&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 19 | Working with Characters | <https://drive.google.com/open?id=16BvHviqVpQIaEIjbobFfVKd8Q8bExJmo&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 20 | Large Constants | <https://drive.google.com/open?id=17xnWWXCgr4BcBkM_oPqtNVEmVmorpBxv&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 21 | Addressing Modes | <https://drive.google.com/open?id=1iK8C1sEghFI7cD9P8SIcmpeLXQnNhv2l&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 22 | Number Systems | <https://drive.google.com/open?id=1jZmvH3RI_W-un3ozgM4K-d8bUQ6U8win&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 23 | Storing $ra registers | <https://drive.google.com/open?id=1i_96jdwVCbYo3MnWHhqYGZzT06xcxdPo&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 24 | Detecting Overlows | <https://drive.google.com/open?id=1PuTL-TmsiBrp4fOLZUff5RSwzaAcz1Iv&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 25 | Multiplication1 | <https://drive.google.com/open?id=1t5NRBj1oK5WD_G-XtwF6TtoX0QJHTEgk&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 26 | Multiplication 2 | <https://drive.google.com/open?id=1nie6ecT_Nd7zoZGBq-_k2_NH3nVvNnm0&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 27 | Division 1 | <https://drive.google.com/open?id=1rLQ_4ei3pNGfXUzu6nKhkJLoWhRm0XmQ&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 28 | Division 2 | <https://drive.google.com/open?id=1Scmxlcat8uUOOOfiC5_qUT64bAJ4keVU&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 29 | Floating Point 1 | <https://drive.google.com/open?id=1iXK4diJi1YBEm1Hpzzi8Z67qjtjR7twd&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 30 | Floating Point 2 | <https://drive.google.com/open?id=1zZ-jQkuu1GnFSuGfs_3Tje1ZfOX_hvp2&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 31 | Floating Point 3 | <https://drive.google.com/open?id=1oN1gtFVkX2MeTQLq4p-4ZPx06fmtfYuo&authuser=haseeb%40uop.edu.pk&usp=drive_fs> |
| 32 | DLD Revision | <https://drive.google.com/file/d/1fOEjoTKF50fJo32ROZf9TYLMBtXezpcJ/view?usp=sharing> |
| 33 | ALU Design 1 | <https://drive.google.com/file/d/1vmr40eSu1ikWOXrommSsDI-BpH6H4Rwr/view?usp=sharing> |
| 34 | ALU Design 2 | <https://drive.google.com/file/d/1J67mY3LJhOsWnZ9jLceHsov_V6qcEUIf/view?usp=sharing> |
| 35 | ALU Design 3 | <https://drive.google.com/file/d/1ok-Sd5H0PadOEsYiWRmqgZtQMYFk63y_/view?usp=sharing> |
| 36 | ALU Design 4 | <https://drive.google.com/file/d/1An72Qo0MSbuMAOepSPo9aN7nqJs5u8WG/view?usp=sharing> |
| 37 | Assessing and Understanding Performance | <https://drive.google.com/file/d/1e117G6bAA0MZY-3Qugoq8XNcM34heBry/view?usp=sharing>  (Watch till 01 hour:05 minutes) it is followed by an old topic |
| 38 | CPU Design | <https://drive.google.com/file/d/1smCIXE7e13klBSxOjANNpn4vehuQInzk/view?usp=sharing> |
| 39 | CPU Design 2 with Pipelining | <https://drive.google.com/file/d/1_GJtLPIvBkEQ-Zn4uccFwC14Tk4zl0k6/view?usp=sharing> |
| 39 | Pipelining and Pipelining Hazards | <https://drive.google.com/file/d/14YyKyuczpdGZh5E075BNAuuBA_thsa9R/view?usp=sharing>  (Pipelining Hazards)  <https://drive.google.com/file/d/1MIBukFcngUKRW87-dfxhvFnnnPTEz4UZ/view?usp=sharing> |
| 40 | Memory Hierarchy 1 | <https://drive.google.com/file/d/1MlGcfbXq46jmRsqI0GgYxrBHwx1JuKEG/view?usp=sharing> |
| 41 | Memory Hierarchy 2 | <https://drive.google.com/file/d/1m_ceS-7jfCL8MZ-0KjQUQrIwVpjVoocV/view?usp=sharing> |
| 42 | Virtual Memory | <https://drive.google.com/file/d/1NosjltK68xAbPlzHh4Ld_4afjuX_4OpJ/view?usp=sharing> |