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**MODUL 1**

Kode Standar Amerika untuk Pertukaran Informasi atau American Standard Code for Information Interchange (ASCII) merupakan suatu standar internasional dalam kode huruf dan simbol seperti Hex dan Unicode tetapi ASCII lebih bersifat universal, contohnya 124 adalah untuk karakter "|". Ia selalu digunakan oleh komputer dan alat komunikasi lain untuk menunjukkan teks. Kode ASCII sebenarnya memiliki komposisi bilangan biner sebanyak 7 bit. Namun, ASCII disimpan sebagai sandi 8 bit dengan menambakan satu angka 0 sebagai bit significant paling tinggi. Bit tambahan ini sering digunakan untuk uji paritas. Karakter control pada ASCII dibedakan menjadi 5 kelompok sesuai dengan penggunaan yaitu berturut-turut meliputi logical communication, Device control, Information separator, Code extention, dan physical communication. Code ASCII ini banyak dijumpai pada papan ketik (keyboard) computer atau instrument-instrument digital.

# TABEL ASCII:

|  |  |  |  |
| --- | --- | --- | --- |
| **Nilai ANSI ASCII**  **(Desimal)** | **Nilai Unicode (Heksa Desimal)** | **Binner** | **Karakter** |
| 0 | 00 | 00000000 | NUL |
| 1 | 01 | 00000001 | SOH |
| 2 | 02 | 00000010 | STX |
| 3 | 03 | 00000011 | ETX |
| 4 | 04 | 00000100 | EOT |
| 5 | 05 | 00000101 | ENQ |
| 6 | 06 | 00000110 | ACK |
| 7 | 07 | 00000111 | BEL |
| 8 | 08 | 00001000 | BS |
| 9 | 09 | 00001001 | HT |
| 10 | 0A | 00001010 | LF |
| 11 | 0B | 00001011 | VT |
| 12 | 0C | 00001100 | FF |
| 13 | 0D | 00001101 | CR |
| 14 | 0E | 00001110 | SO |
| 15 | 0F | 00001111 | SI |
| 16 | 10 | 00010000 | DLE |
| 17 | 11 | 00010001 | DC1 |
| 18 | 12 | 00010010 | DC2 |
| 19 | 13 | 00010011 | DC3 |
| 20 | 14 | 00010100 | DC4 |
| 21 | 15 | 00010101 | NAK |
| 22 | 16 | 00010110 | SYN |
| 23 | 17 | 00010111 | ETB |
| 24 | 18 | 00011000 | CAN |
| 25 | 19 | 00011001 | EM |
| 26 | 1A | 00011010 | SUB |
| 27 | 1B | 00011011 | ESC |
| 28 | 1C | 00011100 | FS |
| 29 | 1D | 00011101 | GS |

|  |  |  |  |
| --- | --- | --- | --- |
| 30 | 1E | 00011110 | RS |
| 31 | 1F | 00011111 | US |
| 32 | 20 | 00100000 | space |
| 33 | 21 | 00100001 | ! |
| 34 | 22 | 00100010 | " |
| 35 | 23 | 00100011 | # |
| 36 | 24 | 00100100 | $ |
| 37 | 25 | 00100101 | % |
| 38 | 26 | 00100110 | & |
| 39 | 27 | 00100111 | ' |
| 40 | 28 | 00101000 | ( |
| 41 | 29 | 00101001 | ) |
| 42 | 2A | 00101010 | \* |
| 43 | 2B | 00101011 | + |
| 44 | 2C | 00101100 | , |
| 45 | 2D | 00101101 | - |
| 46 | 2E | 00101110 | . |
| 47 | 2F | 00101111 | / |
| 48 | 30 | 00110000 | 0 |
| 49 | 31 | 00110001 | 1 |
| 50 | 32 | 00110010 | 2 |
| 51 | 33 | 00110011 | 3 |
| 52 | 34 | 00110100 | 4 |
| 53 | 35 | 00110101 | 5 |
| 54 | 36 | 00110110 | 6 |
| 55 | 37 | 00110111 | 7 |
| 56 | 38 | 00111000 | 8 |
| 57 | 39 | 00111001 | 9 |
| 58 | 3A | 00111010 | : |
| 59 | 3B | 00111011 | ; |
| 60 | 3C | 00111100 | < |
| 61 | 3D | 00111101 | = |
| 62 | 3E | 00111110 | > |
| 63 | 3F | 00111111 | ? |
| 64 | 40 | 01000000 | @ |
| 65 | 41 | 01000001 | A |
| 66 | 42 | 01000010 | B |
| 67 | 43 | 01000011 | C |
| 68 | 44 | 01000100 | D |
| 69 | 45 | 01000101 | E |
| 70 | 46 | 01000110 | F |
| 71 | 47 | 01000111 | G |
| 72 | 48 | 01001000 | H |
| 73 | 49 | 01001001 | I |
| 74 | 4A | 01001010 | J |

|  |  |  |  |
| --- | --- | --- | --- |
| 75 | 4B | 01001011 | K |
| 76 | 4C | 01001100 | L |
| 77 | 4D | 01001101 | M |
| 78 | 4E | 01001110 | N |
| 79 | 4F | 01001111 | O |
| 80 | 50 | 01010000 | P |
| 81 | 51 | 01010001 | Q |
| 82 | 52 | 01010010 | R |
| 83 | 53 | 01010011 | S |
| 84 | 54 | 01010100 | T |
| 85 | 55 | 01010101 | U |
| 86 | 56 | 01010110 | V |
| 87 | 57 | 01010111 | W |
| 88 | 58 | 01011000 | X |
| 89 | 59 | 01011001 | Y |
| 90 | 5A | 01011010 | Z |
| 91 | 5B | 01011011 | [ |
| 92 | 5C | 01011100 | \ |
| 93 | 5D | 01011101 | ] |
| 94 | 5E | 01011110 | ^ |
| 95 | 5F | 01011111 | \_ |
| 96 | 60 | 01100000 | ` |
| 97 | 61 | 01100001 | a |
| 98 | 62 | 01100010 | b |
| 99 | 63 | 01100011 | c |
| 100 | 64 | 01100100 | d |
| 101 | 65 | 01100101 | e |
| 102 | 66 | 01100110 | f |
| 103 | 67 | 01100111 | g |
| 104 | 68 | 01101000 | h |
| 105 | 69 | 01101001 | i |
| 106 | 6A | 01101010 | j |
| 107 | 6B | 01101011 | k |
| 108 | 6C | 01101100 | l |
| 109 | 6D | 01101101 | m |
| 110 | 6E | 01101110 | n |
| 111 | 6F | 01101111 | o |
| 112 | 70 | 01110000 | p |
| 113 | 71 | 01110001 | q |
| 114 | 72 | 01110010 | r |
| 115 | 73 | 01110011 | s |
| 116 | 74 | 01110100 | t |
| 117 | 75 | 01110101 | u |
| 118 | 76 | 01110110 | v |
| 119 | 77 | 01110111 | w |

|  |  |  |  |
| --- | --- | --- | --- |
| 120 | 78 | 01111000 | x |
| 121 | 79 | 01111001 | y |
| 122 | 7A | 01111010 | z |
| 123 | 7B | 01111011 | { |
| 124 | 7C | 01111100 | | |
| 125 | 7D | 01111101 | } |
| 126 | 7E | 01111110 | ~ |
| 127 | 7F | 01111111 | DEL |

**Daftar Perintah Bahasa Assembly:**

|  |  |
| --- | --- |
| **Instruksi** | **Keterangan Singkatan** |
| ACALL | Absolute Call |
| ADD | Add |
| ADDC | Add with Carry |
| AJMP | Absolute Jump |
| ANL | AND Logic |
| CJNE | Compare and Jump if Not Equal |
| CLR | Clear |
| CPL | Complement |
| DA | Decimal Adjust |
| DEC | Decrement |
| DIV | Divide |
| DJNZ | Decrement and Jump if Not Zero |
| INC | Increment |
| JB | Jump if Bit Set |
| JBC | Jump if Bit Set and Clear Bit |
| JC | Jump if Carry Set |
| JMP | Jump to Address |
| JNB | Jump if Not Bit Set |
| JNC | Jump if Carry Not Set |
| JNZ | Jump if Accumulator Not Zero |
| JZ | Jump if Accumulator Zero |
| LCALL | Long Call |
| LJMP | Long Jump |
| MOV | Move from Memory |
| MOVC | Move from Code Memory |
| MOVX | Move from Extended Memory |
| MUL | Multiply |
| NOP | No Operation |
| ORL | OR Logic |
| POP | Pop Value From Stack |
| PUSH | Push Value Onto Stack |
| RET | Return From Subroutine |
| RETI | Return From Interrupt |
| RL | Rotate Left |
| RLC | Rotate Left through Carry |

|  |  |
| --- | --- |
| RR | Rotate Right |
| RRC | Rotate Right through Carry |
| SETB | Set Bit |
| SJMP | Short Jump |
| SUBB | Subtract With Borrow |
| SWAP | Swap Nibbles |
| XCH | Exchange Bytes |
| XCHD | Exchange Digits |
| XRL | Exclusive OR Logic |