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1. Pengertian ASCII adalah kode Standar Amerika untuk Pertukaran Informasi atau sebuah standar internasional dalam pengkodean huruf dan simbol seperti Unicode dan Hex tetapi ASCII lebih bersifat universal.
2. Karakter kontrol ASCII (kode karakter 0-31)

32 karakter pertama dalam tabel ASCII adalah kode kontrol yang tidak dapat dicetak dan digunakan untuk mengontrol periferal seperti printer.

| **DEC** | **OCT** | **HEX** | **BIN** | **Symbol** | **Description** |
| --- | --- | --- | --- | --- | --- |
| 0 | 000 | 00 | 00000000 | NUL | Null char |
| 1 | 001 | 01 | 00000001 | SOH | Start of Heading |
| 2 | 002 | 02 | 00000010 | STX | Start of Text |
| 3 | 003 | 03 | 00000011 | ETX | End of Text |
| 4 | 004 | 04 | 00000100 | EOT | End of Transmission |
| 5 | 005 | 05 | 00000101 | ENQ | Enquiry |
| 6 | 006 | 06 | 00000110 | ACK | Acknowledgment |
| 7 | 007 | 07 | 00000111 | BEL | Bell |
| 8 | 010 | 08 | 00001000 | BS | Back Space |
| 9 | 011 | 09 | 00001001 | HT | Horizontal Tab |
| 10 | 012 | 0A | 00001010 | LF | Line Feed |
| 11 | 013 | 0B | 00001011 | VT | Vertical Tab |
| 12 | 014 | 0C | 00001100 | FF | Form Feed |
| 13 | 015 | 0D | 00001101 | CR | Carriage Return |
| 14 | 016 | 0E | 00001110 | SO | Shift Out / X-On |
| 15 | 017 | 0F | 00001111 | SI | Shift In / X-Off |
| 16 | 020 | 10 | 00010000 | DLE | Data Line Escape |
| 17 | 021 | 11 | 00010001 | DC1 | Device Control 1 (oft. XON) |
| 18 | 022 | 12 | 00010010 | DC2 | Device Control 2 |
| 19 | 023 | 13 | 00010011 | DC3 | Device Control 3 (oft. XOFF) |
| 20 | 024 | 14 | 00010100 | DC4 | Device Control 4 |
| 21 | 025 | 15 | 00010101 | NAK | Negative Acknowledgement |
| 22 | 026 | 16 | 00010110 | SYN | Synchronous Idle |
| 23 | 027 | 17 | 00010111 | ETB | End of Transmit Block |
| 24 | 030 | 18 | 00011000 | CAN | Cancel |
| 25 | 031 | 19 | 00011001 | EM | End of Medium |
| 26 | 032 | 1A | 00011010 | SUB | Substitute |
| 27 | 033 | 1B | 00011011 | ESC | Escape |
| 28 | 034 | 1C | 00011100 | FS | File Separator |
| 29 | 035 | 1D | 00011101 | GS | Group Separator |
| 30 | 036 | 1E | 00011110 | RS | Record Separator |
| 31 | 037 | 1F | 00011111 | US | Unit Separator |

1. Karakter yang dapat dicetak ASCII (kode karakter 32-127)

| 1. **DEC** | **OCT** | **HEX** | **BIN** | **Symbol** | **Description** |
| --- | --- | --- | --- | --- | --- |
| 32 | 040 | 20 | 00100000 |  | Space |
| 33 | 041 | 21 | 00100001 | ! | Exclamation mark |
| 34 | 042 | 22 | 00100010 | " | Double quotes (or speech marks) |
| 35 | 043 | 23 | 00100011 | # | Number |
| 36 | 044 | 24 | 00100100 | $ | Dollar |
| 37 | 045 | 25 | 00100101 | % | Per cent sign |
| 38 | 046 | 26 | 00100110 | & | Ampersand |
| 39 | 047 | 27 | 00100111 | ' | Single quote |
| 40 | 050 | 28 | 00101000 | ( | Open parenthesis (or open bracket) |
| 41 | 051 | 29 | 00101001 | ) | Close parenthesis (or close bracket) |
| 42 | 052 | 2A | 00101010 | \* | Asterisk |
| 43 | 053 | 2B | 00101011 | + | Plus |
| 44 | 054 | 2C | 00101100 | , | Comma |
| 45 | 055 | 2D | 00101101 | - | Hyphen |
| 46 | 056 | 2E | 00101110 | . | Period, dot or full stop |
| 47 | 057 | 2F | 00101111 | / | Slash or divide |
| 48 | 060 | 30 | 00110000 | 0 | Zero |
| 49 | 061 | 31 | 00110001 | 1 | One |
| 50 | 062 | 32 | 00110010 | 2 | Two |
| 51 | 063 | 33 | 00110011 | 3 | Three |
| 52 | 064 | 34 | 00110100 | 4 | Four |
| 53 | 065 | 35 | 00110101 | 5 | Five |
| 54 | 066 | 36 | 00110110 | 6 | Six |
| 55 | 067 | 37 | 00110111 | 7 | Seven |
| 56 | 070 | 38 | 00111000 | 8 | Eight |
| 57 | 071 | 39 | 00111001 | 9 | Nine |
| 58 | 072 | 3A | 00111010 | : | Colon |
| 59 | 073 | 3B | 00111011 | ; | Semicolon |
| 60 | 074 | 3C | 00111100 | < | Less than (or open angled bracket) |
| 61 | 075 | 3D | 00111101 | = | Equals |
| 62 | 076 | 3E | 00111110 | > | Greater than (or close angled bracket) |
| 63 | 077 | 3F | 00111111 | ? | Question mark |
| 64 | 100 | 40 | 01000000 | @ | At symbol |
| 65 | 101 | 41 | 01000001 | A | Uppercase A |
| 66 | 102 | 42 | 01000010 | B | Uppercase B |
| 67 | 103 | 43 | 01000011 | C | Uppercase C |
| 68 | 104 | 44 | 01000100 | D | Uppercase D |
| 69 | 105 | 45 | 01000101 | E | Uppercase E |
| 70 | 106 | 46 | 01000110 | F | Uppercase F |
| 71 | 107 | 47 | 01000111 | G | Uppercase G |
| 72 | 110 | 48 | 01001000 | H | Uppercase H |
| 73 | 111 | 49 | 01001001 | I | Uppercase I |
| 74 | 112 | 4A | 01001010 | J | Uppercase J |
| 75 | 113 | 4B | 01001011 | K | Uppercase K |
| 76 | 114 | 4C | 01001100 | L | Uppercase L |
| 77 | 115 | 4D | 01001101 | M | Uppercase M |
| 78 | 116 | 4E | 01001110 | N | Uppercase N |
| 79 | 117 | 4F | 01001111 | O | Uppercase O |
| 80 | 120 | 50 | 01010000 | P | Uppercase P |
| 81 | 121 | 51 | 01010001 | Q | Uppercase Q |
| 82 | 122 | 52 | 01010010 | R | Uppercase R |
| 83 | 123 | 53 | 01010011 | S | Uppercase S |
| 84 | 124 | 54 | 01010100 | T | Uppercase T |
| 85 | 125 | 55 | 01010101 | U | Uppercase U |
| 86 | 126 | 56 | 01010110 | V | Uppercase V |
| 87 | 127 | 57 | 01010111 | W | Uppercase W |
| 88 | 130 | 58 | 01011000 | X | Uppercase X |
| 89 | 131 | 59 | 01011001 | Y | Uppercase Y |
| 90 | 132 | 5A | 01011010 | Z | Uppercase Z |
| 91 | 133 | 5B | 01011011 | [ | Opening bracket |
| 92 | 134 | 5C | 01011100 | \ | Backslash |
| 93 | 135 | 5D | 01011101 | ] | Closing bracket |
| 94 | 136 | 5E | 01011110 | ^ | Caret - circumflex |
| 95 | 137 | 5F | 01011111 | \_ | Underscore |
| 96 | 140 | 60 | 01100000 | ` | Grave accent |
| 97 | 141 | 61 | 01100001 | a | Lowercase a |
| 98 | 142 | 62 | 01100010 | b | Lowercase b |
| 99 | 143 | 63 | 01100011 | c | Lowercase c |
| 100 | 144 | 64 | 01100100 | d | Lowercase d |
| 101 | 145 | 65 | 01100101 | e | Lowercase e |
| 102 | 146 | 66 | 01100110 | f | Lowercase f |
| 103 | 147 | 67 | 01100111 | g | Lowercase g |
| 104 | 150 | 68 | 01101000 | h | Lowercase h |
| 105 | 151 | 69 | 01101001 | i | Lowercase i |
| 106 | 152 | 6A | 01101010 | j | Lowercase j |
| 107 | 153 | 6B | 01101011 | k | Lowercase k |
| 108 | 154 | 6C | 01101100 | l | Lowercase l |
| 109 | 155 | 6D | 01101101 | m | Lowercase m |
| 110 | 156 | 6E | 01101110 | n | Lowercase n |
| 111 | 157 | 6F | 01101111 | o | Lowercase o |
| 112 | 160 | 70 | 01110000 | p | Lowercase p |
| 113 | 161 | 71 | 01110001 | q | Lowercase q |
| 114 | 162 | 72 | 01110010 | r | Lowercase r |
| 115 | 163 | 73 | 01110011 | s | Lowercase s |
| 116 | 164 | 74 | 01110100 | t | Lowercase t |
| 117 | 165 | 75 | 01110101 | u | Lowercase u |
| 118 | 166 | 76 | 01110110 | v | Lowercase v |
| 119 | 167 | 77 | 01110111 | w | Lowercase w |
| 120 | 170 | 78 | 01111000 | x | Lowercase x |
| 121 | 171 | 79 | 01111001 | y | Lowercase y |
| 122 | 172 | 7A | 01111010 | z | Lowercase z |
| 123 | 173 | 7B | 01111011 | { | Opening brace |
| 124 | 174 | 7C | 01111100 | | | Vertical bar |
| 125 | 175 | 7D | 01111101 | } | Closing brace |
| 126 | 176 | 7E | 01111110 | ~ | Equivalency sign - tilde |
| 127 | 177 | 7F | 01111111 |  | Delete |

| **DEC** | **OCT** | **HEX** | **BIN** | **Symbol** | **Description** |
| --- | --- | --- | --- | --- | --- |
| 128 | 200 | 80 | 10000000 | € | Euro sign |
| 129 | 201 | 81 | 10000001 |  |  |
| 130 | 202 | 82 | 10000010 | ‚ | Single low-9 quotation mark |
| 131 | 203 | 83 | 10000011 | ƒ | Latin small letter f with hook |
| 132 | 204 | 84 | 10000100 | „ | Double low-9 quotation mark |
| 133 | 205 | 85 | 10000101 | … | Horizontal ellipsis |
| 134 | 206 | 86 | 10000110 | † | Dagger |
| 135 | 207 | 87 | 10000111 | ‡ | Double dagger |
| 136 | 210 | 88 | 10001000 | ˆ | Modifier letter circumflex accent |
| 137 | 211 | 89 | 10001001 | ‰ | Per mille sign |
| 138 | 212 | 8A | 10001010 | Š | Latin capital letter S with caron |
| 139 | 213 | 8B | 10001011 | ‹ | Single left-pointing angle quotation |
| 140 | 214 | 8C | 10001100 | Œ | Latin capital ligature OE |
| 141 | 215 | 8D | 10001101 |  |  |
| 142 | 216 | 8E | 10001110 | Ž | Latin capital letter Z with caron |
| 143 | 217 | 8F | 10001111 |  |  |
| 144 | 220 | 90 | 10010000 |  |  |
| 145 | 221 | 91 | 10010001 | ‘ | Left single quotation mark |
| 146 | 222 | 92 | 10010010 | ’ | Right single quotation mark |
| 147 | 223 | 93 | 10010011 | “ | Left double quotation mark |
| 148 | 224 | 94 | 10010100 | ” | Right double quotation mark |
| 149 | 225 | 95 | 10010101 | • | Bullet |
| 150 | 226 | 96 | 10010110 | – | En dash |
| 151 | 227 | 97 | 10010111 | — | Em dash |
| 152 | 230 | 98 | 10011000 | ˜ | Small tilde |
| 153 | 231 | 99 | 10011001 | ™ | Trade mark sign |
| 154 | 232 | 9A | 10011010 | š | Latin small letter S with caron |
| 155 | 233 | 9B | 10011011 | › | Single right-pointing angle quotation mark |
| 156 | 234 | 9C | 10011100 | œ | Latin small ligature oe |
| 157 | 235 | 9D | 10011101 |  |  |
| 158 | 236 | 9E | 10011110 | ž | Latin small letter z with caron |
| 159 | 237 | 9F | 10011111 | Ÿ | Latin capital letter Y with diaeresis |
| 160 | 240 | A0 | 10100000 |  | Non-breaking space |
| 161 | 241 | A1 | 10100001 | ¡ | Inverted exclamation mark |
| 162 | 242 | A2 | 10100010 | ¢ | Cent sign |
| 163 | 243 | A3 | 10100011 | £ | Pound sign |
| 164 | 244 | A4 | 10100100 | ¤ | Currency sign |
| 165 | 245 | A5 | 10100101 | ¥ | Yen sign |
| 166 | 246 | A6 | 10100110 | ¦ | Pipe, Broken vertical bar |
| 167 | 247 | A7 | 10100111 | § | Section sign |
| 168 | 250 | A8 | 10101000 | ¨ | Spacing diaeresis - umlaut |
| 169 | 251 | A9 | 10101001 | © | Copyright sign |
| 170 | 252 | AA | 10101010 | ª | Feminine ordinal indicator |
| 171 | 253 | AB | 10101011 | « | Left double angle quotes |
| 172 | 254 | AC | 10101100 | ¬ | Not sign |
| 173 | 255 | AD | 10101101 | ­ | Soft hyphen |
| 174 | 256 | AE | 10101110 | ® | Registered trade mark sign |
| 175 | 257 | AF | 10101111 | ¯ | Spacing macron - overline |
| 176 | 260 | B0 | 10110000 | ° | Degree sign |
| 177 | 261 | B1 | 10110001 | ± | Plus-or-minus sign |
| 178 | 262 | B2 | 10110010 | ² | Superscript two - squared |
| 179 | 263 | B3 | 10110011 | ³ | Superscript three - cubed |
| 180 | 264 | B4 | 10110100 | ´ | Acute accent - spacing acute |
| 181 | 265 | B5 | 10110101 | µ | Micro sign |
| 182 | 266 | B6 | 10110110 | ¶ | Pilcrow sign - paragraph sign |
| 183 | 267 | B7 | 10110111 | · | Middle dot - Georgian comma |
| 184 | 270 | B8 | 10111000 | ¸ | Spacing cedilla |
| 185 | 271 | B9 | 10111001 | ¹ | Superscript one |
| 186 | 272 | BA | 10111010 | º | Masculine ordinal indicator |
| 187 | 273 | BB | 10111011 | » | Right double angle quotes |
| 188 | 274 | BC | 10111100 | ¼ | Fraction one quarter |
| 189 | 275 | BD | 10111101 | ½ | Fraction one half |
| 190 | 276 | BE | 10111110 | ¾ | Fraction three quarters |
| 191 | 277 | BF | 10111111 | ¿ | Inverted question mark |
| 192 | 300 | C0 | 11000000 | À | Latin capital letter A with grave |
| 193 | 301 | C1 | 11000001 | Á | Latin capital letter A with acute |
| 194 | 302 | C2 | 11000010 | Â | Latin capital letter A with circumflex |
| 195 | 303 | C3 | 11000011 | Ã | Latin capital letter A with tilde |
| 196 | 304 | C4 | 11000100 | Ä | Latin capital letter A with diaeresis |
| 197 | 305 | C5 | 11000101 | Å | Latin capital letter A with ring above |
| 198 | 306 | C6 | 11000110 | Æ | Latin capital letter AE |
| 199 | 307 | C7 | 11000111 | Ç | Latin capital letter C with cedilla |
| 200 | 310 | C8 | 11001000 | È | Latin capital letter E with grave |
| 201 | 311 | C9 | 11001001 | É | Latin capital letter E with acute |
| 202 | 312 | CA | 11001010 | Ê | Latin capital letter E with circumflex |
| 203 | 313 | CB | 11001011 | Ë | Latin capital letter E with diaeresis |
| 204 | 314 | CC | 11001100 | Ì | Latin capital letter I with grave |
| 205 | 315 | CD | 11001101 | Í | Latin capital letter I with acute |
| 206 | 316 | CE | 11001110 | Î | Latin capital letter I with circumflex |
| 207 | 317 | CF | 11001111 | Ï | Latin capital letter I with diaeresis |
| 208 | 320 | D0 | 11010000 | Ð | Latin capital letter ETH |
| 209 | 321 | D1 | 11010001 | Ñ | Latin capital letter N with tilde |
| 210 | 322 | D2 | 11010010 | Ò | Latin capital letter O with grave |
| 211 | 323 | D3 | 11010011 | Ó | Latin capital letter O with acute |
| 212 | 324 | D4 | 11010100 | Ô | Latin capital letter O with circumflex |
| 213 | 325 | D5 | 11010101 | Õ | Latin capital letter O with tilde |
| 214 | 326 | D6 | 11010110 | Ö | Latin capital letter O with diaeresis |
| 215 | 327 | D7 | 11010111 | × | Multiplication sign |
| 216 | 330 | D8 | 11011000 | Ø | Latin capital letter O with slash |
| 217 | 331 | D9 | 11011001 | Ù | Latin capital letter U with grave |
| 218 | 332 | DA | 11011010 | Ú | Latin capital letter U with acute |
| 219 | 333 | DB | 11011011 | Û | Latin capital letter U with circumflex |
| 220 | 334 | DC | 11011100 | Ü | Latin capital letter U with diaeresis |
| 221 | 335 | DD | 11011101 | Ý | Latin capital letter Y with acute |
| 222 | 336 | DE | 11011110 | Þ | Latin capital letter THORN |
| 223 | 337 | DF | 11011111 | ß | Latin small letter sharp s - ess-zed |
| 224 | 340 | E0 | 11100000 | à | Latin small letter a with grave |
| 225 | 341 | E1 | 11100001 | á | Latin small letter a with acute |
| 226 | 342 | E2 | 11100010 | â | Latin small letter a with circumflex |
| 227 | 343 | E3 | 11100011 | ã | Latin small letter a with tilde |
| 228 | 344 | E4 | 11100100 | ä | Latin small letter a with diaeresis |
| 229 | 345 | E5 | 11100101 | å | Latin small letter a with ring above |
| 230 | 346 | E6 | 11100110 | æ | Latin small letter ae |
| 231 | 347 | E7 | 11100111 | ç | Latin small letter c with cedilla |
| 232 | 350 | E8 | 11101000 | è | Latin small letter e with grave |
| 233 | 351 | E9 | 11101001 | é | Latin small letter e with acute |
| 234 | 352 | EA | 11101010 | ê | Latin small letter e with circumflex |
| 235 | 353 | EB | 11101011 | ë | Latin small letter e with diaeresis |
| 236 | 354 | EC | 11101100 | ì | Latin small letter i with grave |
| 237 | 355 | ED | 11101101 | í | Latin small letter i with acute |
| 238 | 356 | EE | 11101110 | î | Latin small letter i with circumflex |
| 239 | 357 | EF | 11101111 | ï | Latin small letter i with diaeresis |
| 240 | 360 | F0 | 11110000 | ð | Latin small letter eth |
| 241 | 361 | F1 | 11110001 | ñ | Latin small letter n with tilde |
| 242 | 362 | F2 | 11110010 | ò | Latin small letter o with grave |
| 243 | 363 | F3 | 11110011 | ó | Latin small letter o with acute |
| 244 | 364 | F4 | 11110100 | ô | Latin small letter o with circumflex |
| 245 | 365 | F5 | 11110101 | õ | Latin small letter o with tilde |
| 246 | 366 | F6 | 11110110 | ö | Latin small letter o with diaeresis |
| 247 | 367 | F7 | 11110111 | ÷ | Division sign |
| 248 | 370 | F8 | 11111000 | ø | Latin small letter o with slash |
| 249 | 371 | F9 | 11111001 | ù | Latin small letter u with grave |
| 250 | 372 | FA | 11111010 | ú | Latin small letter u with acute |
| 251 | 373 | FB | 11111011 | û | Latin small letter u with circumflex |
| 252 | 374 | FC | 11111100 | ü | Latin small letter u with diaeresis |
| 253 | 375 | FD | 11111101 | ý | Latin small letter y with acute |
| 254 | 376 | FE | 11111110 | þ | Latin small letter thorn |
| 255 | 377 | FF | 11111111 | ÿ | Latin small letter y with diaeresis |

1. Daftar perintah bahasa assembly untuk mesin intel keluaran x86
2. Assembly Directive (yaitu merupakan kode yang menjadi arahan bagi assembler/compiler untuk menata program)

|  |  |
| --- | --- |
| Instruksi | Keterangan |
| EQU | Pendefinisian konstanta |
| DB | Pendefinisian data dengan ukuran satuan 1 byte |
| DW | Pendefinisian data dengan ukuran satuan 1 word |
| DBIT | Pendefinisian data dengan ukuran satuan 1 bit |
| DS | Pemesanan tempat penyimpanan data di RAM |
| ORG | Inisialisasi alamat mulai program |
| END | Penanda akhir program |
| CSEG | Penanda penempatan di code segment |
| XSEG | Penanda penempatan di external data segment |
| DSEG | Penanda penempatan di internal direct data segment |
| ISEG | Penanda penempatan di internal indirect data segment |
| BSEG | Penanda penempatan di bit data segment |
| CODE | Penanda mulai pendefinisian program |
| XDATA | Pendefinisian external data |
| DATA | Pendefinisian internal direct data |
| IDATA | Pendefinisian internal indirect data |
| BIT | Pendefinisian data bit |
| #INCLUDE | Mengikutsertakan file program lain |

1. Instruksi (yaitu kode yang harus dieksekusi oleh CPU mikrokontroler dengan melakukan operasi tertentu sesuai dengan daftar yang sudah tertanam dalam CPU)

|  |  |
| --- | --- |
| 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 |