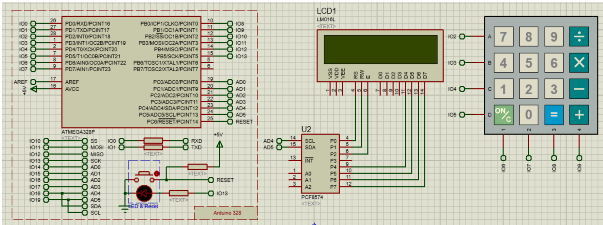
**Praktikum Mikroprosesor 2**

**Minggu 5**

Materi : Membuat sistem wartel menggunakan keypad dan LCD

Buatlah sistem wartel dengan ketentuan :

1. Buatah sistem wartel dengan rangkaian seperti ini :



1. Buatlah output keypad sebagai berikut :

Angkah 0-9 = angka yang sama

On/c = symbol bintang (\*)

= = symbol pagar(#)

÷ = Redial

X = Backspace

- = Call

+ = Disconect

1. Tampilan awal LCD :

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | W | A | R | T | E | L |  |  |  |  |  |
|  |  |  |  |  | M | A | H | A | L |  |  |  |  |  |  |

1. Ketikan tombol “ call ” di tekan maka tamilan LCD akan menjadi :

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| N | O |  | : |  |  |  |  |  |  |  |  |  |  |  |  |
| T | I | M | E | : | 0 | 0 | : | 0 | 0 |  |  |  |  |  |  |

1. Kemudian masukkan nomer yang akan di tujuh (contoh no 0856721)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| N | O |  | : | 0 | 8 | 5 | 6 | 7 | 2 | 1 |  |  |  |  |  |
| T | I | M | E | : | 0 | 0 | : | 0 | 0 |  |  |  |  |  |  |

1. Jika tombol “ backspace “ di tekan maka angka paling belakang akan hilang :

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| N | O |  | : | 0 | 8 | 5 | 6 | 7 | 2 |  |  |  |  |  |  |
| T | I | M | E | : | 0 | 0 | : | 0 | 0 |  |  |  |  |  |  |

Dan akan tetap menghilang 1 nomer jika tombol “ backspace “ di tekan lagi

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| N | O |  | : | 0 | 8 | 5 | 6 | 7 |  |  |  |  |  |  |  |
| T | I | M | E | : | 0 | 0 | : | 0 | 0 |  |  |  |  |  |  |

1. Jika nomer sudah di masukkan lalu di tekan tombol “ call ” untuk menelepon,dan waktu akan berjalan

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| N | O |  | : | 0 | 8 | 5 | 6 | 7 | 2 | 1 |  |  |  |  |  |
| T | I | M | E | : | 0 | 0 | : | 0 | 0 |  |  |  |  |  |  |

Waktu berjalan tiap detik

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| N | O |  | : | 0 | 8 | 5 | 6 | 7 | 2 | 1 |  |  |  |  |  |
| T | I | M | E | : | 0 | 0 | : | 0 | 1 |  |  |  |  |  |  |

Jika waktu sudah melebihhi 60 maka angka di depan akan bertambah 1 dan angka di belakang kembali ke 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| N | O |  | : | 0 | 8 | 5 | 6 | 7 | 2 | 1 |  |  |  |  |  |
| T | I | M | E | : | 0 | 1 | : | 0 | 0 |  |  |  |  |  |  |

1. Ketika tombol “ disconnect ” di tekan saat waktu berjalan maka akan menampilkan :

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| B | I | A | Y | A |  | : | \* | \* | \* | \* |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Untuk biayanya adalah 50 per 10 detik

1. Jadi jika lamanya menelepon sama seperti di bawah ini :

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| N | O |  | : | 0 | 8 | 5 | 6 | 7 | 2 | 1 |  |  |  |  |  |
| T | I | M | E | : | 0 | 1 | : | 0 | 0 |  |  |  |  |  |  |

Jika di tekan tombol “ disconnect “ maka tampilan menjadi seperti ini :

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| B | I | A | Y | A |  | : | 3 | 0 | 0 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

1. Setelah biaya keluar maka pengguna dapat memelih keluar atau menelepon lagi.
2. Untuk menelepon lagi pengguna menggunaka tombol “ call ” lalu tampilan menjadi sepeti berikut :

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| N | O |  | : |  |  |  |  |  |  |  |  |  |  |  |  |
| T | I | M | E | : | 0 | 0 | : | 0 | 0 |  |  |  |  |  |  |

Semuanya akan sama seperti awal kecuali biaya dari peneleponan sebelumnya di tambah peneleponan yang baru.Contohnya seperti ini :

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| N | O |  | : | 0 | 8 | 4 | 3 | 6 | 7 | 2 |  |  |  |  |  |
| T | I | M | E | : | 0 | 0 | : | 4 | 5 |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| B | I | A | Y | A |  | : | 5 | 2 | 5 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

1. Untuk keluar menggunakan tombol “ redial ” maka tampilan akan menjadi seperti ini :

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | W | A | R | T | E | L |  |  |  |  |  |
|  |  |  |  |  | M | A | H | A | L |  |  |  |  |  |  |

1. Ketentuan/point

|  |  |
| --- | --- |
| Bisa memasukkan angka | 10 |
| Bisa menggunakan tombol call dengan baik | 20 |
| Bisa menggunakan tombol backspace dengan baik | 10 |
| Bisa menggunakan tombol disconnect dengan baik | 10 |
| Bisa menggunakan tombol Redial dengan baik | 10 |
| Bisa mengeluarkan biaya dengan baik | 10 |

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Dengan subjek : Mik2-Keypad-“NRP”

Nama File : “nama”-“NRP”