000000**VISVESVARAYA0TECHNOLOGICAL0UNIVERSITY**



MINI0PROJECT0REPORT0ON

**“LUGGAGE0SECURITY0ALARM”**

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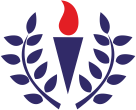


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**DEPARTMENT0OF0ELECTRONICS0AND0COMMUNICATION0ENGINEERING**



**CERTIFICATE**

Certified0that0the0mini0project0work0entitled0“**Luggage0security0alarm**”0carried0out0by0**Divyashree0R0(1NH18EC711),0Sharanya0KN(1NH18EC747),0Sowmya0G(1NH18EC714),0Devika0K(1NH18ME037)0**bonafide0students0of0Electronics0and0Communication0Department0,0New0Horizon0College0of0Engineering,0Bangalore.0

The0mini0project0report0has0been0approved0as0it0satisfies0the0academic0requirements0in0respect0of0mini0project0work0prescribed0for0the0said0degree.

Project0Guide0 00HOD0ECE

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**External0Viva**

Name0of0Examiner Signature0with0Date

1.

**ACKNOWLEDGEMENT**

The0satisfaction0that0accompany0the0successful0completion0of0any0task0would0be,0but0impossible0without0the0mention0of0the0people0who0made0it0possible,0whose0constant0guidance0and0encouragement0helped0us0succeed.

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**ABSTRACT**

During0our0travels0by0train0and0bus,0we0carry0many0important0things0and0there0is0a0fear0that0someone0will0lift0our0luggage.0To0overcome0these0fears,0here0is0an0easy0circuit0based0on0the0NAND0gate.

In0addition0to0the0circuit's0basic0building0block0CD4011,0some0components0such0as0resistors,0capacitors0and0transistor0and0relay0are0used0to0save0your0important0things0from0robbery0with0the0help0of0this0easy0circuit.0When0someone0tries0to0unlock0it0as0a0result0of0its0wire0splitting0and0it0generates0an0alarm0beep.0You0must0know0the0truth0table0of0NAND0Gate0to0work.

**Advantages0of0Luggage0Security0System:**

* + This0security0system0is0used0to0protect0your0valuables0when0someone0tries0to0steal0them0by0producing0a0sound.
  + It0can0be0operated0with03V,0so0power0consumption0is0very0low.0Ing0It0is0portable0when0traveling0because0it0has0fewer0components.

**Components0required:**

1.0Relay0switch

2.0Diode01N4001

3.0Resistor

4.0Capacitor

5.02N22220transistor

6.0NAND0gate

7.0IC0CD04011

8.0Connecting0Wires0

9.0Bread0Board0

**INTRODUCTION**

Safety0is0always0at0its0highest0priority0for0most0of0us.0Safety0is0the0main0factor0that0we0would0look0at0priority0when0we0are0traveling0with0luggage's,0which0hold0a0lot0of0valuables.0As0already0mentioned,0we0always0carry0any0valuables0with0us,0the0first0thing0we0ensure0is,0is0it0safe0!.0No0matter0how0many0times0we0ensure0we0still0have0the0fear0of0losing0our0valuables.0Growth0in0the0digital0field0has0found0solutions0to0most0of0our0daily0life0problems.0Most0of0our0day-to-day0problems0have0all0found0their0way0through0the0various0trends0that0digital0electronics0have0introduced.0The0improvisation0in0technology0has0solved0a0lot0of0problems,0and0trends0in0digital0electronics0are0serving0to0be0a0boon0to0mankind.

The0main0reason0for0fear0is0that0the0number0of0thefts0and0robbery0has0increased0to0a0greater0extent.0Unemployment,0poverty0may0be0the0cause0of0this0but0still0stealing0others'0property0is0a0serious0crime.0The0only0way0to0stop0this0is0by0alerting0people0with0proper0security0arrangements.0Bus0hijacking0is0what0we0hear0commonly,0this0is0where0the0fear0of0crime0lies.0We0have0seen0people0stepping0ahead0for0protection,0they0use0chains,0lock0as0security0arrangements0to0secure0their0luggage.

This0might0be0a0nice0try,0but0it's0still0not0sufficient0to0reassure0ourselves0that0we0are0in0safe0hands,0our0property0is0in0a0safe0zone.0Locks0and0chain0can0be0easily0broken0and0our0attempt0for0safety0goes0into0vain.0And,0therefore,0to0reassure0ourselves0here0we0have0presented0a0simple0alarm0circuit0to0alert0us0from0such0a0situation.

One0such0solution0is0the0luggage0security0alarm.0The0meaning0is0very0evident0from0the0name0itself.0This0circuit0basically0ensures0that0our0luggage0is0secure0and0safe.0When0we0travel0in0bus0or0train0we0are0always0very0aware0of0our0luggage.0No0matter0how0strong0the0Analog0lock0systems0are,0we0still0have0the0fear0that0there0are0chances0for0the0lock0to0get0slashed0and0losing0our0valuables.

This0digital0circuit0solves0the0issue0for0us.0So0whenever0someone0tries0to0lift0the0luggage,0the0owner0gets0an0indication0from0the0alarm0as0the0continuity0in0the0circuit0breaks.0As0a0result0with0an0audio0alarm0indication0it0is0easy0to0ensure0that0our0luggage0is0safe,0and0hence0we0can0have0a0peaceful0and0sound0journey.0This0security0just0ensures0that0our0luggage0and0valuables0are0all0safe0during0the0journey.0Especially0during0the0night0train0and0bus0journey0we0can0ensure0our0valuables0are0actually0safe.0So0this0circuit0plays0its0role0in0providing0safety0for0our0valuables.

**LITERATURE0SURVEY**

**Title**:00Luggage0Security0alarm

**Survey**

0Initially0luggage0were0taken0care0by0the0ones0who0bare0it0which0was0hectic0for0them0to0manage0or0look0after0while0travelling0during0nights.0Thereby0the0only0security0for0the0luggage0was0the0owner.jchdkjhdkjchdkjsdhcksdjchsdcksdjchdscksdjchsdkjsdhcsdkjcsdhkdjchsdkcjdh

Later0came0the0CD40110IC0based0luggage0security0alarm0which0beeps0when0someone0lifts0it0in0our0absence.0This0basic0electronic0circuit0is0easy0to0rig0up0and0also0cheap0as0it0uses0NAND0gates0as0its0main0concept.0This0one0small0security0alarm0provides0security0and0also0let’s0us0travel0peacefully0during0nights0and0also0during0daytime.0Typical0home0security.

In0future0the0luggage0security0is0going0to0get0implemented0using0GMS0module0which0make0the0project0more0advanced0by0sending0the0message0to0the0owner0if0their0luggage0is0lifted0by0someone.0This0is0used0in0crowded0areas0where0here0is0lot0of0noise0and0we0can’t0listen0to0alarm.0Hence0this0can0be0the0best0method0for0protecting0our0device.000

Work0on0developing0the0European0benchmark0for0digital0cellular0voice0telecommunications0began0in01983,0when0the0European0Conference0of0Postal0and0Telecommunication0Administration0(CEPT)0Group0established0the0Special0Mobile0(GSM)0Committee0and0later0provided0a0permanent0technical0support0group0with0its0Paris0headquarters.0Five0years0later,0in01987,0150delegates0from0130European0countries0signed0the0Memorandum0of0Understanding0EU0standards0have0been0approved0to0make0Copenhagen,0and0GSM,0a0mandatory0standard0for0developing0and0deploying0a0common0cell0phone0system0across0Europe.0The0decision0to0develop0the0continental0standard0eventually0led0to0a0unified,0open0and0standards-based0network0that0is0larger0than0the0United0States.jhgkjhzgjzhxgjhgfjdhsdhgjhgdsfjhgfjdshfgdsjfhgfjdfgjfgdfjdgfjwdgfsdjfgeoufyrelfkjfi

In0February01987,0Europe0produced0the0first0agreed0GSM0technical0specification.0Ministers0of0the0four0major0EU0countries0consolidated0their0political0support0for0the0GSM0with0the0announcement0of0the0Global0Information0Networks0Ban0in0May,0and0the0MoU0was0signed0for0the0GSM0in0September.0The0memorandum0of0understanding0obligates0mobile0phone0operators0across0Europe0to0invest0in0new0GSM0networks0at0an0ambitious0general0date.

In0this0short0span0of0380weeks,0all0Europe0(countries0and0industries)0have0supported0GSM0in0a0rare0unit0and0are0guided0by0four0public0officials:0Armin0Silberhorn0(Germany),0Stephen0Temple0(United0Kingdom),0Philippe0Dupuis0(France)0and0Renzo0Filly0(Italy).0In01989,0the0Group0Special0Mobile0Committee0was0transferred0from0CEPT0to0the0European0Telecommunications0Standards0Institute0(ETSI).

At0the0same0time,0France0and0Germany0signed0a0joint0development0agreement0in019840and0Italy0and0the0United0Kingdom0in01986.0In01986,0the0European0Commission0proposed0to0reserve0the09000MHz0spectrum0band0for0GSM.0Former0Finnish0Prime0Minister0Harry0Holceri0calls0the0world's0first0GSM0on0July01,01991,0Kareena0Suonio0(deputy0mayor0of0the0city0Tampere)0Using0a0network0built0by0Telenokia0and0Siemens0and0managed0by0RadioLinja.0The0following0year,0the0first0short0message0service0(SMS0or0"text0message")0was0sent,0and0Vodafone0UK0and0Telecom0Finland0signed0the0first0international0roaming0agreement.

Work0on0extending0the0GSM0standard0to0the018000MHz0frequency0band0began0in019910and0the0first018000MHz0network0was0called0the0DCS018000in0the0United0Kingdom0in01993.0Also,0Telecom0Australia0became0the0first0network0operator0to0implement0GSM.0A0network0outside0of0Europe0and0the0first0practical0handheld0GSM0mobile0phone0became0available.

In01995,0fax,0data0and0SMS0messaging0services0were0commercially0launched,0the0first019000MHz0GSM0network0implemented0in0the0United0States,0and0GSM0subscribers0worldwide0exceeded0100million.0In0the0same0year,0the0GSM0Association0was0formed.0Prepaid0GSM0SIM0cards0were0launched0in019960and0GSM0subscribers0worldwide0exceeded01000million0in01998.

In02000,0the0first0GPRS0commercial0services0were0launched0and0the0first0GPRS0compatible0phones0were0put0up0for0sale.0In02001,0the0first0UMTS0network0(W-CDMA)0was0launched,0a03G0technology0that0is0not0part0of0GSM.0Global0GSM0subscribers0exceed05000million.0In02002,0the0first0multimedia0messaging0service0(MMS)0was0introduced0and0the0first0GSM0network0was0laid0  
For0operation0in0the08000MHz0frequency0band.0Edge0Services0began0operating0on0the0network0in02003,0and0the0number0of0GSM0subscribers0worldwide0exceeded0one0billion0in02004.

By02005,0GSM0Networks0accounted0for0over075%0of0the0global0cellular0network0market,0serving0over01.50billion0subscribers.0In02005,0the0first0network0with0HSDPA0capability0was0also0implemented.0The0first0HSUPA0network0was0launched0in02007.0(High-Speed0​​Packet0Access0(HSPA)00and0its0uplink0and0downlink0versions0of03G0technologies,0not0part0of0GSM).0Global0GSM0subscribers0exceeded0three0billion0in02008.

Estimated0by0the0GSM0Association0in02010,0technologies0defined0in0the0GSM0standard0serve080%0of0the0mobile0market,0cover0more0than050billion0people0in0more0than02120countries0and0territories,0and0GSM0is0the0most0ubiquitous0of0cellular0networks.

GSM0is0a0second-generation0(2G)0standard0that0uses0time0segment0multiple0access0spectrum0exchange0(TDMA)0issued0by0the0European0Telecommunications0Standards0Institute0(ETSI).0The0GSM0standard0does0not0include03G's0Code0Division0Multiple0Access0(CDMA)0technology0Universal0Mobile0Telecommunications0System0(UMTS)0or0Orthogonal0Frequency0Division0Multiple0Access0Technology0(OFDMA)04G0LTE0Standards0issued0by03GPP.

GSM,0for0the0first0time,0set0the0standard0for0Europe0for0wireless0networks.0It0was0adopted0by0many0countries0outside0Europe.0This0allowed0subscribers0to0use0other0GSM0networks0with0roaming0agreements.0The0general0standard0reduced0research0and0development0costs,0because0hardware0and0software0can0be0sold0to0the0local0market0with0only0small0variants.0

Telstra0in0Australia0closed0its0GSM2G0network0on0December01,02016,0the0first0mobile0network0operator0to0dismantle0the0GSM0network.0[14]0AT&T0Mobility0in0the0United0States0is0the0second0mobile0provider0to0shut0down0its0GSM0network0(January01,02017).0[15]0Australia's0Optus0Australia0closed0its0GSM02G0network0on0August01,020170as0part0of0Optus0GSM0.Western0Australia0and0the0Northern0Territory0were0closed0in0early0April02017.0[16]0Singapore0completely0shut0down02G0services0in0April02017.

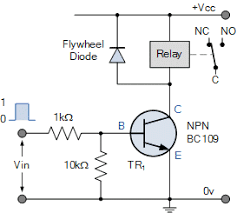
**RELAY0SWITCH**

A0relay0is0an0electrically0operated0switch.0It0consists0of0a0set0of0input0terminals0for0one0or0more0control0signals0and0a0set0of0operational0contact0terminals.0The0switch0can0have0any0number0of0contacts0in0many0forms,0such0as0contacts,0break0contacts,0or0combinations0thereof.0Relays0are0used0when0it0is0necessary0to0control0a0circuit0with0a0low0power0independent0signal0or0when0multiple0circuits0must0be0controlled0by0a0signal.0The0relays0were0used0for0the0first0time0in0long0distance0telegraph0circuits0as0signal0repeaters:0they0update0the0incoming0signal0of0a0circuit0by0transmitting0it0to0another0circuit.0Relays0have0been0widely0used0in0telephone0exchanges0and0early0computers0to0perform0logical0operations.0Dkjfdgjhfgjhgjhggjshvgjsdhggjshgsjdhgjfhdgfdjfhgjshg

The0traditional0form0of0a0relay0uses0an0electromagnet0to0close0or0open0the0contacts,0but0other0operating0principles0have0been0invented,0such0as0semiconductor0relays0that0use0the0properties0of0the0semiconductor0to0control0without0resorting0to0moving0parts.0Relays0with0calibrated0operating0characteristics0and0sometimes0multiple0operating0coils0are0used0to0protect0the0electrical0circuits0from0overloads0or0failures.0In0modern0power0systems,0these0functions0are0provided0by0digital0instruments,0also0known0as0protection0relays.0The0lock0relays0require0only0a0control0power0pulse0to0operate0the0switch0persistently.0Another0pulse0applied0to0a0second0set0of0control0terminals,0or0a0pulse0of0opposite0polarity,0resets0the0switch,0while0repeated0pulses0of0the0same0type0have0no0effect.0Magnetic0lock0relays0are0useful0in0applications0where0interrupted0power0should0not0affect0the0circuits0controlled0by0the0relay.0A0simple0electromagnetic0relay0consists0of0a0coil0of0wire0wrapped0around0a0soft0iron0core0(a0solenoid),0an0iron0yoke0providing0a0path0of0low0resistance0to0magnetic0flux,0a0moving0iron0armor0and0one0or0more0sets0of0contacts0(There0are0two0contacts0on0the0relay0on0the0picture).0The0armor0is0hinged0to0the0yoke0and0is0mechanically0attached0to0one0or0more0sets0of0movable0contacts.0The0armature0is0held0in0place0by0a0spring,0so0that0when0the0relay0is0de-energized,0there0is0a0gap0in0the0magnetic0circuit.0In0this0condition,0one0of0the0two0sets0of0relay0contacts0on0the0picture0is0closed0and0the0other0set0is0open.0Other0relays0may0have0more0or0less0sets0of0contacts0depending0on0their0function.0The0relay0in0the0picture0also0includes0a0cable0that0connects0the0armor0to0the0screed.0This0ensures0the0continuity0of0the0circuit0between0the0movable0contacts0in0the0armature0and0the0circuit0track0in0the0printed0circuit0board0(PCB)0through0the0cylinder0head,0which0is0soldered0to0the0PCB.dskgdkjhdskjhgfkjhfgfdjgfsdhgvfdjhfdhffhgdfj

**Kbjhfgkdfjhfdgkfjghdfkgjfhfkgjdfhkfdjghfkgjfhgkdfghdfkgjfhkdfjghfkgjfdhgkfdh**

When0an0electric0current0passes0through0the0coil,0it0generates0a0magnetic0field0that0activates0the0armature0and0the0movement0of0the0moving0contacts0that0results0establishes0or0breaks0(depending0on0the0construction)0a0connection0with0a0fixed0contact.0If0the0set0of0contacts0has0closed0when0the0relay0has0de-energized,0the0movement0opens0the0contacts0and0interrupts0the0connection,0and0conversely0if0the0contacts0are0open.0When0the0current0in0the0coil0is0disconnected,0the0armature0is0returned0by0a0force0about0half0as0strong0as0the0magnetic0force0in0its0relaxed0position.0Generally,0this0force0is0provided0by0a0spring,0but0gravity0is0also0commonly0used0in0industrial0motor0starters.0Most0relays0are0built0to0work0quickly.0In0a0low0voltage0application,0this0reduces0the0noise;0in0a0high0voltage0or0current0application0reduces0the0electric0arc.



**RESISTOR**

A0resistor0is0a0passive0twocomponent0electrical0component0that0implements0an0electrical0resistor0as0a0circuit0element.0In0electronic0circuits,0resistors0are0used0to0reduce0current0flow,0adjust0signal0levels,0divide0voltages,0bias0active0elements,0and0terminate0transmission0lines,0among0other0uses.0High0power0resistors0that0can0dissipate0many0watts0of0electrical0energy0in0the0form0of0heat0can0be0used0in0motor0controls,0in0power0distribution0systems,0or0as0test0loads0for0generators.

**Jhgfdkgfkgrjdhgkfjghfkgjdfhgkfdjghdfkgjhfdgkdfjghfdkghfdkgjhdfgkfdjhgkfdjghfkh**

0Fixed0resistors0have0resistances0that0change0only0slightly0with0temperature,0duration0or0operating0voltage.0Variable0resistors0may0be0used0to0adjust0circuit0elements0(such0as0a0volume0control0or0lamp0dimmer),0or0as0devices0for0detecting0heat,0light,0moisture,0force,0or0chemical0activity.

Resistors0are0common0elements0of0electrical0networks0and0electronic0circuits0and0are0ubiquitous0in0electronic0equipment.0Practical0resistors0as0discrete0components0may0be0composed0of0various0compounds0and0forms.0Resistors0are0also0implemented0in0integrated0circuits.

Dgfdjfgfjhgfdsjfsdgjhsdfgddhgfdsfjdsgfgdfdfdsfdhfgdfsdfdhfgfdsfdfdhsgfdshdgfdhfgdfhdgf

Carbon0Composition0Resistors0(CCRs)0are0formed0by0a0solid0cylindrical0resistive0element0with0integrated0cables0or0metal0caps0to0which0the0conductive0cables0are0attached.0The0resistance0body0is0protected0with0paint0or0plastic.0Resistances0to0the0carbon0composition0of0the0early0twentieth0century0had0uninsulated0bodies;0The0conductive0cables0were0wrapped0around0the0ends0of0the0rod0of0the0resistance0element0and0soldered.0The0total0resistance0was0painted0to0color0code0its0value.

The0resistive0element0consists0of0a0mixture0of0finely0pulverized0carbon0and0an0insulating0material,0usually0ceramic.0A0resin0holds0the0mixture0together.0Resistance0is0determined0by0the0ratio0of0filler0material0(ceramic0powder)0to0carbon.0Higher0concentrations0of0carbon,0which0is0a0good0conductor,0result0in0lower0resistance.0Resistances0to0carbon0composition0were0commonly0used0in0the01960s0and0earlier,0but0are0no0longer0popular0for0general0use0because0other0types0have0better0specifications,0such0as0tolerance,0voltage,0and0voltage0dependence0

Askjdsdkfhdgdfkjhgdfkgjdfghfdkgufhgkdfjghdfkgfjhgkdfjghdfkgudfhgdfkgjfhgkfjghdfkgj

0Resistance0to0carbon0composition0changes0in0value0when0subjected0to0overvoltages.0In0addition,0if0the0internal0moisture0content,0due0to0prolonged0exposure0to0a0humid0environment,0is0significant,0the0heat0of0welding0creates0an0irreversible0change0in0the0resistance0value.0Resistances0to0carbon0composition0have0little0stability0over0time0and,0therefore,0have0been0classified0in0the0factory0for0a0tolerance0of05%0at0best.0These0resistors0are0not0inductive,0which0has0advantages0when0used0in0surge0protection0and0voltage0pulse0reduction0applications.0Carbon0composition0resistors0have0a0greater0ability0to0withstand0overloads0due0to0component0size.0

Resistances0to0carbon0composition0are0still0available,0but0they0are0relatively0expensive.0The0values0​​ranged0from0fractions0of0one0ohm0to0220mega0Ahms.0Because0of0their0high0price,0these0resistors0are0no0longer0used0in0most0applications.0However,0they0are0used0in0power0supplies0and0welding0controls.00They0are0also0requested0for0the0repair0of0old0electronic0equipment0for0which0authenticity0is0a0factor

00

**CAPACITOR**

A0capacitor0is0a0device0that0stores0electrical0energy0in0an0electric0field.0It0is0a0passive0electronic0component0with0two0terminals.0The0effect0of0a0capacitor0is0called0capacitance.0Although0there0is0some0capacitance0between0two0nearby0electrical0conductors0in0a0circuit,0a0capacitor0is0a0component0designed0to0add0capacitance0to0a0circuit.0The0capacitor0was0originally0known0as0a0capacitor0or0capacitor.0This0name0and0its0related0words0are0still0widely0used0in0many0languages,0but0rarely0in0English,0with0the0exception0of0condenser0microphones,0also0known0as0condenser0microphones.0

The0physical0form0and0construction0of0the0practical0capacitors0vary0widely0and0many0types0of0capacitors0are0commonly0used.0Most0capacitors0contain0at0least0two0electrical0conductors0often0in0the0form0of0metal0plates0or0surfaces0separated0by0a0dielectric0medium.0A0conductor0may0be0a0sheet,0a0thin0film,0a0sintered0metal0bead,0or0an0electrolyte.0The0non-conductive0dielectric0acts0to0increase0the0capacitance0of0the0capacitor.0Commonly0used0materials0such0as0dielectrics0include0glass,0ceramic,0plastic0films,0paper,0mica,0air0and0oxide0layers.

0Capacitors0are0widely0used0as0parts0of0electrical0circuits0in0many0common0electrical0devices.0Unlike0a0resistor,0an0ideal0capacitor0does0not0dissipate0energy,0although0actual0capacitors0dissipate0a0small0amount.0(See0Non-Ideal0Behavior)0When0an0electrical0potential0is0applied,0a0voltage0across0a0capacitor,0for0example,0when0a0capacitor0is0connected0to0a0battery,0an0electric0field0develops0across0the0dielectric,0causing0a0positive0net0charge0accumulates0on0one0plate0and0a0net0negative0charge0to0be0collected0on0the0other0plate.0No0current0actually0flows0through0the0dielectric.

0However,0there0is0a0charge0flow0in0the0source0circuit.0If0the0condition0is0maintained0sufficiently,0the0current0through0the0source0circuit0ceases.0If0a0variable0voltage0is0applied0over0time0through0the0capacitor0leads,0the0source0experiences0a0DC0current0because0of0the0charge0and0discharge0cycles0of0the0capacitor.

A0capacitor0consists0of0two0conductors0separated0by0a0non-conductive0region.0The0non-conductive0region0may0be0a0vacuum0or0an0electrical0insulating0material0called0dielectric.0

Examples0of0dielectric0media0are0glass,0air,0paper,0plastic,0ceramic0and0even0a0semiconductor0depletion0region0chemically0identical0to0the0conductors.0According0to0Coulomb's0law,0a0charge0exerted0on0one0conductor0exerts0a0force0on0the0charge0carriers0in0the0other0conductor,0attracting0a0charge0of0opposite0polarity0and0repelled0in0the0form0of0polarity0charges,0so0that0a0charge0of0opposite0polarity0is0induced0in0the0conductor.0Surface0of0the0other0driver.0The0conductors0maintain0equal0and0opposite0charges0on0their0facing0surfaces0[18,0and0the0dielectric0develops0an0electric0field.

****

**2N22220TRANSISTOR**

2N22220The0is0a0bipolar0NPN0junction0transistor0(BJT)0used0in0low0power0amplification0or0switching0applications.0It0is0designed0for0low0to0medium0current,0low0power,0medium0voltage0and0can0operate0at0moderately0high0speeds.0It0was0originally0manufactured0in0the0TO-180canister,0as0shown0in0the0picture.2N22220is0considered0a0very0common0transistor,0and0is0used0as0an0example0NPN0transistor.0It0is0often0used0as0a0small0signal0transistor0and0remains0a0small0versatile0transistor0of0lasting0popularity.0Replacements0for0the02N22220are0now0commonly0available0in0the0cheapest0package0of0the0TO-92,0known0as0PN22220or0P2N2222,0which0has0similar0specifications0with0the0exception0of0the0lowest0maximum0collector0current.0The0P2N22220has0a0different0pin0order0than0the02N22220metal0case,0its0transmitter0and0collector0connections0being0switched;0Other0plastic0box0transistors0also0have0different0pins.

Individual0transistors0are0also0available0in0a0number0of0different0surface0mount0boxes,0and0several0manufacturers0offer0surface0mount0boxes0incorporating0multiple02N22220transistors0in0a0package0as0a0set0of0transistors.0The0general0specifications0of0the0different0variants0are0similar,0the0most0important0difference0being0the0maximum0current0and0power0dissipation0allowed.

The02N39040is0an0NPN0transistor0that0can0only0change0one0third0of0the0current0of02N2222,0but0has0similar0characteristics.02N39040exhibits0its0peak0of0direct0gain0(beta)0at0a0current0less0than02N22220and0is0useful0in0applications0with0IC0amplifier0reduced,0for0example0(gain0peak0at0100mA0for02N39040but0at01500mA0for02N2222)

The02N2222,0of0higher0power,0is0a0very0similar0NPN0transistor,0able0to0switch0safely0three0times0more0current0than0the02N3904.

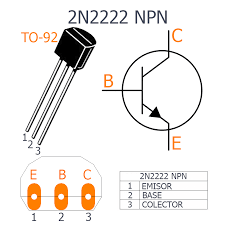
Dkjhgsdkjfhdgjdkhdgjdsfgsdfdgfsdjhfdgjhfgdjfhgfdsjfhdgfjdshdgsfjdshfgdjfhgjdjdfgjfhdgfjsd

However,0in0many0applications,0such0as0variable0frequency0oscillators,0in0which0lower0currents0are0used0to0minimize0thermal0heating0and0thermal0drift0resulting0from0the0fundamental0frequency,0the0higher0current0capacitance0of02N22220does0not0provides0no0benefit.0.0While0the02N22220is0optimized0to0achieve0its0highest0gain0at0currents0of0about01500mA,0the02N39040is0optimized0for0currents0of0about0100mA.0The0JEDEC0registration0of0a0device0number0ensures0that0all0parts0offered0with0this0number0comply0with0specific0ratings.0The0parameters0recorded0by0JEDEC0include0limit0dimensions,0low0signal0current0gain,0transition0frequency,0maximum0voltage0resistance0values,0current0classification,0power0and0temperature0dissipation0classification0and0others,0measured0in0standard0test0conditions.0The0other0references0will0have0different0parameters.0The0exact0specifications0depend0on0the0manufacturer,0the0type0of0case0and0the0variation.0It0is0therefore0important0to0consult0the0data0sheet0to0know0the0exact0part0number0and0the0manufacture.The0general0specifications0of0the0different0variants0are0similar,0the0most0important0difference0being0the0maximum0current0and0power0dissipation0allowed.

The02N39040is0an0NPN0transistor0that0can0only0change0one0third0of0the0current0of02N2222,0but0has0similar0characteristics.02N39040exhibits0its0peak0of0direct0gain0(beta)0at0a0current0less0than02N22220and0is0useful0in0applications0with0IC0amplifier0reduced,0for0example0(gain0peak0at0100mA0for02N39040but0at01500mA0for02N2222).0The02N2222,0of0higher0power,0is0a0very0similar0NPN0transistor,0able0to0switch0safely0three0times0more0current0than0the02N3904.

0In0many0applications,0such0as0variable0frequency0oscillators,0in0which0lower0currents0are0used0to0minimize0thermal0heating0and0thermal0drift0resulting0from0the0fundamental0frequency,0the0higher0current0capacitance0of02N22220does0not0provides0no0benefit.0.0While0the02N22220is0optimized0to0achieve0its0highest0gain0at0currents0of0about01500mA,0the02N39040is0optimized0for0currents0of0about0100mA.

**00000000000000000000000000000000000000000**

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**CONNECTING0WIRES**

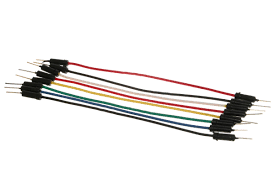
A0wire0is0a0single0strand0or0a0metal0rod,0generally0cylindrical,0flexible.0The0cables0are0used0to0support0mechanical0loads0or0electrical0and0telecommunications0signals.0The0wire0is0generally0formed0by0pulling0the0metal0through0a0hole0in0a0die0or0an0extraction0plate.0Wire0gauges0exist0in0several0standard0sizes,0expressed0in0terms0of0caliber0number.0The0term0"cable"0is0also0used0more0freely0to0refer0to0a0set0of0such0wires,0as0in0the0"multi-wire0cable",0which0is0more0properly0called0a0mechanical0wire0or0wire.0The0yarn0is0in0the0form0of0a0solid0core,0braided0or0braided.

0Although0its0cross0section0is0generally0circular,0the0cable0may0be0made0in0square,0hexagonal,0flattened0rectangular0or0other0cross0sections,0for0decorative0or0technical0purposes,0such0as0high0efficiency0coils0on0the0loudspeakers.0Helical0spring,0such0as0the0Slinky0toy,0are0made0from0special0flattened0wire.0Useful0for0wiring0test0plates.0Solid0cable0is0cheaper0to0manufacture0than0braided0cable0and0is0used0where0there0is0little0need0for0flexibility0in0the0cable.0Solid0wire0also0provides0mechanical0strength;0and,0because0it0has0relatively0less0surface0exposed0to0corrosive0attacks,0protection0against0the0environment.0The0braided0cable0is0composed0of0several0small0cables0grouped0together0or0coiled0to0form0a0larger0conductor.hkjhkjhkjhkjhkjhkjhkhkjhkjhk

Kdjhsdkjhfjghfgkfjdhgkgjfhgkfdjghfkgjdhfgkfjghkgjdhgfkghfgkdjfghfdkgjhfgkdfjhgdfkjghfkghd

0The0braided0cable0is0more0flexible0than0the0rigid0cable0of0the0same0section.0Braided0wire0is0used0when0greater0resistance0to0metal0fatigue0is0required.0Such0situations0include0connections0between0printed0circuit0boards0in0multi-printed0circuit0board0devices,0where0the0rigidity0of0the0solid0cable0would0produce0excessive0voltage0as0a0result0of0movement0during0assembly0or0maintenance;0A.C.0line0cables0for0appliances;0musical0instrument0cables;0computer0mouse0cables;0welding0electrode0cables;0control0cables0that0connect0the0moving0parts0of0the0machine;0cables0for0mining0machines;0machine0cables0to0hang0out;0and0many0others

At0high0frequency,0the0current0moves0near0the0surface0of0the0cable0under0the0effect0of0the0skin,0resulting0in0a0greater0loss0of0power0in0the0cable.0It0may0seem0that0the0braided0cable0reduces0this0effect0because0the0total0surface0area0of0​​the0wires0is0greater0than0the0equivalent0full0cable0surface,0but0the0normal0braided0cable0does0not0reduce0the0effect0of0the0skin0because0all0the0wires0are0short-circuited.0And0they0behave0together.0As0a0single0driver.0A0braided0cable0will0have0a0higher0resistance0than0a0full0cable0of0the0same0diameter0because0its0cross0section0is0not0entirely0copper;0There0are0inevitable0spaces0between0the0filaments0(this0is0the0problem0of0wrapping0circles0for0circles0in0a0circle).0It0is0said0that0a0twisted0cable0with0the0same0cross0section0of0the0conductor0as0a0solid0cable0has0the0same0equivalent0rating0and0always0has0a0larger0diameter.

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**BREAD0BOARD**

A0test0plate0is0a0building0block0for0prototyping0electronic0products.0Originally,0the0word0referred0to0a0literal0breadboard,0a0piece0of0polished0wood0used0to0cut0bread.0In0the01970s,0the0seamless0test0plate0(also0called0connection0plate,0terminal0dot0matrix)0was0available0and0today0the0term0"test0plate"0is0commonly0used0to0designate0these.0Because0the0seamless0board0does0not0require0soldering,0it0is0reusable.0This0makes0it0easier0to0create0temporary0prototypes0and0experiment0with0circuit0design.0For0this0reason,0homogeneous0test0plates0are0also0popular0among0students0and0in0technology0education.

0Previous0panel0types0did0not0have0this0property.0A0tape0card0(Veroboard)0and0similar0prototype0circuit0boards,0used0for0the0construction0of0unique0semi-permanent0or0welded0prototypes,0can0not0be0easily0reused.0Prototypes0of0a0variety0of0electronic0systems0can0be0created0using0test0cards,0ranging0from0small0analog0and0digital0circuits0to0complete0central0processing0units0.A0modern0power0socket0without0solder0plate0consists0of0a0perforated0plastic0block0with0numerous0spring0clips0made0of0alpaca0alloy0and0tinned0phosphor0bronze0under0the0perforations.0Clips0are0often0called0points0of0contact0or0points0of0contact.0The0number0of0bonding0points0is0often0indicated0in0the0specification0of0the0test0plate.0Gjhghjgfugfjhhggjyhjbfhgfjhgjhgjhgjhgjhgjhgjhgfjhdgf

The0space0between0the0clips0(main0step)0is0usually00.10inches0(2.540mm).0Integrated0circuits0(ICs)0in0inline0double0packets0(DIPs)0can0be0inserted0to0raise0the0center0line0of0the0block.0Interconnect0cables0and0discrete0component0cables0(such0as0capacitors,0resistors,0and0inductors)0can0be0inserted0into0the0remaining0free0holes0to0complete0the0circuit.0When0integrated0circuits0are0not0used,0discrete0components0and0connection0cables0may0use0one0of0the0holes.0Typically,0spring0clips0have0a0capacity0of010amp0at050volts0and00.3330amps0at0150volts0(50watts).0The0edge0of0the0board0has0male0and0female0dovetail0notches,0which0allows0them0to0be0assembled0to0form0a0large0board.0Due0to0the0relatively0large0parasitic0capacitance0compared0to0a0properly0distributed0printed0circuit0board0(about020pF0between0adjacent0contact0columns),0high0inductance0of0some0

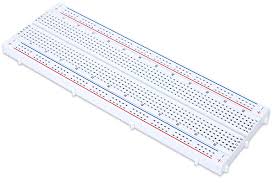
connections0and0relatively0high0and0low0reproducible0contact0resistance0The0test0plates0without0welding0are0limited0to0operation0at0relatively0low0frequencies,0generally0less0than0100MHz,0depending0on0the0nature0of0the0circuit.0Relatively0high0contact0resistance0may0already0be0a0problem0for0some0DC0and0very0low0frequency0circuits.0Solderless0test0plates0are0further0limited0by0their0nominal0voltage0and0current0ratings.

No0solder0test0plates0are0generally0not0compatible0with0devices0with0Surface0Mount0Technology0(SMD)0or0components0with0a0grid0spacing0other0than00.10inch0(2.540mm).0In0addition,0they0can0not0support0components0with0multiple0rows0of0connectors0if0they0do0not0match0the0dual0line0design.0It0is0impossible0to0provide0the0correct0electrical0connectivity.0Sometimes,0small0circuit0board0adapters0called0"connection0adapters"0can0be0used0to0adapt0the0component0to0the0card.0These0adapters0carry0one0or0more0components0and0have0male0connector0pins0spaced00.10inch0apart.0(2.540mm)0single0or0double0line0version,0for0insertion0into0a0seamless0test0plate.0

Larger0components0are0usually0connected0to0a0plug0in0the0adapter,0while0smaller0components0(for0example,0SMD0resistors)0are0usually0soldered0directly0to0the0adapter.0The0adapter0connects0to0the0test0card0via0the00.10inch0connectors.0(2.540mm).0However,0the0need0to0solder0the0components0in0the0adapter0deprives0some0of0the0benefits0of0using0a0transparent0card.

Integrated0circuits0(ICs)0in0inline0double0packets0(DIPs)0can0be0inserted0to0raise0the0center0line0of0the0block.0Interconnect0cables0and0discrete0component0cables0(such0as0capacitors,0resistors,0and0inductors)0can0be0inserted0into0the0remaining0free0holes0to0complete0the0circuit.0When0integrated0circuits0are0not0used,0discrete0components0and0connection0cables0may0use0one0of0the0holes.0Typically,0spring0clips0have0a0capacity0of010amp0at050volts0and00.3330amps0at0150volts0(50watts).0The0edge0of0the0board0has0male0and0female0dovetail0notches,0which0allows0them0to0be0assembled0to0form0a0large0board.0Due0to0the0relatively0large0parasitic0capacitance0compared0to0a0properly0distributed0printed0circuit0board0(about020pF0between0adjacent0contact0columns),0high0inductance0of0some0connections0and0relatively0high0and0low0reproducible0contact0resistance0The0test0plates0without0welding0are0limited0to0operation0at0relatively0low0frequencies,0generally0less0than0100MHz,0depending0on0the0nature0of0the0circuit.0Relatively0high0contact0resistance0may0already0be0a0problem0for0some0DC0and0very0low0frequency0circuits.0Solderless0test0plates0are0further0limited0by0their0nominal0voltage0and0current0ratings.**0**No0solder0test0plates0are0generally0not0compatible0with0devices0with0Surface0Mount0Technology0(SMD)0or0components0with0a0grid0spacing0other0than00.10inch0(2.540mm).

0In0addition,0they0can0not0support0components0with0multiple0rows0of0connectors0if0they0do0not0match0the0dual0line0design.0It0is0impossible0to0provide0the0correct0electrical0connectivity.0Sometimes,0small0circuit0board0adapters0called0"connection0adapters"0can0be0used0to0adapt0the0component0to0the0card.0These0adapters0carry0one0or0more0components0and0have0male0connector0pins0spaced00.10inch0apart.0(2.540mm)0single0or0double0line0version,0for0insertion0into0a0seamless0test0plate.0

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**GSM0SECURITY**

GSM0was0meant0to0be0a0secure0wireless0system.0Pre-shared0key0and0challenge0response0and0user0visualization0using0google0encryption0on0the0air0are0considered.0However,0GSM0is0vulnerable0to0different0types0of0attacks,0each0targeting0a0different0part0of0the0network.

The0development0of0UMTS0introduced0the0Aichlik0Universal0Subscriber0Identity0Module0(USIM),0which0uses0a0long0authentication0key0to0provide0greater0security,0as0well0as0network0and0user0interaction0with0each0other,0but0only0authenticates0users0in0the0GSM0network0(and0vice0versa).0Therefore,0the0security0model0offers0privacy0and0visibility,0but0limited0visualization0capabilities0without0denial.

GSM0uses0several0cryptographic0algorithms0for0security.0A5/1,0A5/20and0A5/30flow0ciphers0are0used0to0ensure0sound0privacy0over0the0air.0A5/10was0first0developed0and0is0a0robust0algorithm0used0in0Europe0and0the0United0States;0A05/20is0weak0and0is0used0in0other0countries.0There0are0serious0weaknesses0in0both0algorithms:0A50/020can0be0broken0in0real0time0with0an0encrypted0text-only0attack,0and0in0January02007,0Hacker's0Choice0launched0the0A5/10decryption0scheme0with0FPGA,0allowing0it0to0break0A5/10with0a0rainbow0table0attack.0The0system0supports0multiple0algorithms,0so0administrators0can0replace0that0cryptographic0version0with0a0stronger0one.

Since02000,0various0attempts0have0been0made0to0understand0the0A50encryption0algorithm.0The0algorithms0for0both0A5/10and0A5/20are0broken0and0their0cryptanalysis0has0been0revealed0in0the0literature.0As0an0example,0Carsten0Nohl0developed0a0series0of0rainbow0tables0(fixed0values0​​that0reduce0the0time0required0to0conduct0an0attack)0and0found0new0sources0for0known0occupies0plain0text.0It0is0possible0to0build0"full0GSM0interceptor0...0from0open0source0components",0but0they0have0not0done0so0due0to0legal0concerns,0he0said.0Nohl0said0that0voice0and0text0conversations0could0be0avoided0by0pretending0to0be0another0user0to0listen0to0voicemail,0call0or0send0free0online0text0messages0via0Motorola's0mobile0phone0and0decryption0software.

GSM0uses0General0Packet0Radio0Service0(GPRS)0for0data0transmission0such0as0web0browsing.0Generally0implemented0GPRS0ciphers0were0publicly0broken0in02011.0Researchers0revealed0flaws0in0the0commonly0used0GEA0/010and0GEA0/020encryption,0and0published0the0open0source0software0"GPRSDecode"0to0detect0GPRS0networks.0He0also0suggested0Some0operators0do0not0like0data0(ie,0using0GEA0/00)0to0find0traffic0or0protocols0they0do0not0like0(for0example,0Skype),0making0customers0unsafe.0The0GEA0/030seems0to0be0difficult0to0break0and0is0still0in0use0on0some0modern0networks.0If0used0with0USIM0prevent0connections0to0duplicate0base0stations0and0lapse0attacks,0users0are0protected0in0the0medium0term,0but0migration0to0the0128-bit0GEA0/040is0still0recommended.

**HISTORY**

Work0on0developing0the0European0benchmark0for0digital0cellular0voice0telecommunications0began0in01983,0when0the0European0Conference0of0Postal0and0Telecommunication0Administration0(CEPT)0Group0established0the0Special0Mobile0(GSM)0Committee0and0later0provided0a0permanent0technical0support0group0with0its0Paris0headquarters.0Five0years0later,0in01987,0150delegates0from0130European0countries0signed0the0Memorandum0of0Understanding0EU0standards0have0been0approved0to0make0Copenhagen,0and0GSM,0a0mandatory0standard0for0developing0and0deploying0a0common0cell0phone0system0across0Europe.0The0decision0to0develop0the0continental0standard0eventually0led0to0a0unified,0open0and0standards-based0network0that0is0larger0than0the0United0States.jhgkjhzgjzhxgjhgfjdhsdhgjhgdsfjhgfjdshfgdsjfhgfjdfgjfgdfjdgfjwdgfsdjfgeoufyrelfkjfi

In0February01987,0Europe0produced0the0first0agreed0GSM0technical0specification.0Ministers0of0the0four0major0EU0countries0consolidated0their0political0support0for0the0GSM0with0the0announcement0of0the0Global0Information0Networks0Ban0in0May,0and0the0MoU0was0signed0for0the0GSM0in0September.0The0memorandum0of0understanding0obligates0mobile0phone0operators0across0Europe0to0invest0in0new0GSM0networks0at0an0ambitious0general0date.

In0this0short0span0of0380weeks,0all0Europe0(countries0and0industries)0have0supported0GSM0in0a0rare0unit0and0are0guided0by0four0public0officials:0Armin0Silberhorn0(Germany),0Stephen0Temple0(United0Kingdom),0Philippe0Dupuis0(France)0and0Renzo0Filly0(Italy).0In01989,0the0Group0Special0Mobile0Committee0was0transferred0from0CEPT0to0the0European0Telecommunications0Standards0Institute0(ETSI).

At0the0same0time,0France0and0Germany0signed0a0joint0development0agreement0in019840and0Italy0and0the0United0Kingdom0in01986.0In01986,0the0European0Commission0proposed0to0reserve0the09000MHz0spectrum0band0for0GSM.0Former0Finnish0Prime0Minister0Harry0Holceri0calls0the0world's0first0GSM0on0July01,01991,0Kareena0Suonio0(deputy0mayor0of0the0city0Tampere)0Using0a0network0built0by0Telenokia0and0Siemens0and0managed0by0RadioLinja.0The0following0year,0the0first0short0message0service0(SMS0or0"text0message")0was0sent,0and0Vodafone0UK0and0Telecom0Finland0signed0the0first0international0roaming0agreement.

Work0on0extending0the0GSM0standard0to0the018000MHz0frequency0band0began0in019910and0the0first018000MHz0network0was0called0the0DCS018000in0the0United0Kingdom0in01993.0Also,0Telecom0Australia0became0the0first0network0operator0to0implement0GSM.0A0network0outside0of0Europe0and0the0first0practical0handheld0GSM0mobile0phone0became0available.

In01995,0fax,0data0and0SMS0messaging0services0were0commercially0launched,0the0first019000MHz0GSM0network0implemented0in0the0United0States,0and0GSM0subscribers0worldwide0exceeded0100million.0In0the0same0year,0the0GSM0Association0was0formed.0Prepaid0GSM0SIM0cards0were0launched0in019960and0GSM0subscribers0worldwide0exceeded01000million0in01998.

In02000,0the0first0GPRS0commercial0services0were0launched0and0the0first0GPRS0compatible0phones0were0put0up0for0sale.0In02001,0the0first0UMTS0network0(W-CDMA)0was0launched,0a03G0technology0that0is0not0part0of0GSM.0Global0GSM0subscribers0exceed05000million.0In02002,0the0first0multimedia0messaging0service0(MMS)0was0introduced0and0the0first0GSM0network0was0laid0  
For0operation0in0the08000MHz0frequency0band.0Edge0Services0began0operating0on0the0network0in02003,0and0the0number0of0GSM0subscribers0worldwide0exceeded0one0billion0in02004.

By02005,0GSM0Networks0accounted0for0over075%0of0the0global0cellular0network0market,0serving0over01.50billion0subscribers.0In02005,0the0first0network0with0HSDPA0capability0was0also0implemented.0The0first0HSUPA0network0was0launched0in02007.0(High-Speed0​​Packet0Access0(HSPA)00and0its0uplink0and0downlink0versions0of03G0technologies,0not0part0of0GSM).0Global0GSM0subscribers0exceeded0three0billion0in02008.

Estimated0by0the0GSM0Association0in02010,0technologies0defined0in0the0GSM0standard0serve080%0of0the0mobile0market,0cover0more0than050billion0people0in0more0than02120countries0and0territories,0and0GSM0is0the0most0ubiquitous0of0cellular0networks.

GSM0is0a0second-generation0(2G)0standard0that0uses0time0segment0multiple0access0spectrum0exchange0(TDMA)0issued0by0the0European0Telecommunications0Standards0Institute0(ETSI).0The0GSM0standard0does0not0include03G's0Code0Division0Multiple0Access0(CDMA)0technology0Universal0Mobile0Telecommunications0System0(UMTS)0or0Orthogonal0Frequency0Division0Multiple0Access0Technology0(OFDMA)04G0LTE0Standards0issued0by03GPP.

GSM,0for0the0first0time,0set0the0standard0for0Europe0for0wireless0networks.0It0was0adopted0by0many0countries0outside0Europe.0This0allowed0subscribers0to0use0other0GSM0networks0with0roaming0agreements.0The0general0standard0reduced0research0and0development0costs,0because0hardware0and0software0can0be0sold0to0the0local0market0with0only0small0variants.0

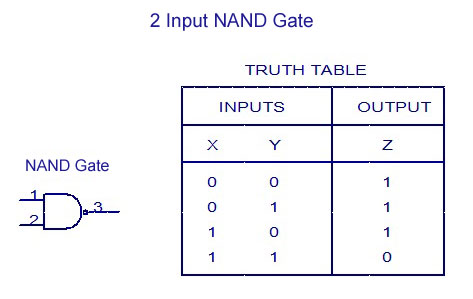
Telstra0in0Australia0closed0its0GSM2G0network0on0December01,02016,0the0first0mobile0network0operator0to0dismantle0the0GSM0network.0[14]0AT&T0Mobility0in0the0United0States0is0the0second0mobile0provider0to0shut0down0its0GSM0network0(January01,02017).0[15]0Australia's0Optus0Australia0closed0its0GSM02G0network0on0August01,020170as0part0of0Optus0GSM0.Western0Australia0and0the0Northern0Territory0were0closed0in0early0April02017.0[16]0Singapore0completely0shut0down02G0services0in0April02017.

**PROPOSED0METHEDOLOGY**

**Principle0of0the0NAND0GATES0:**

* When0any0of0the0input0states0or0both0the0input0states0go0to0the0low0state0in0the0NAND0gate,0then0the0output0will0be0high0
* If0both0the0inputs0are0at0high0state,0then0the0output0will0be0low0at0that0case.

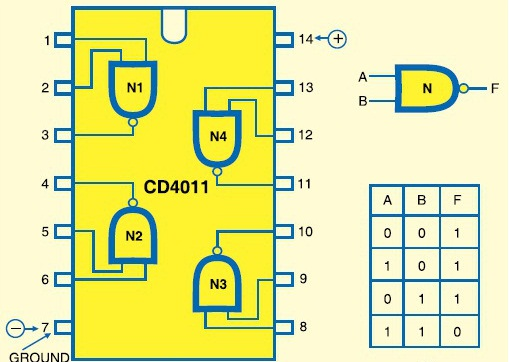
The0truth0table0and0logic0diagram0of0NAND0IC0is0given0below0:

****

**IC0CD4011**

**PIN0DIAGRAM0:0**

Below0is0the0pin0diagram0of0the0CD040110(Supplementary0Metal0Oxide0Semiconductor0Chip.0It0consists0of040NAND0gates,0which0provide0140pin0IC,0pin0number0140to0+0VCC0and070to0ground.

0000000The0truth0table0for0IC0CD40110remains0the0same0as0the0NAND0gate0because0IC0CD401100000000000000000000contains040NAND0ICs,0resulting0in0the0same0fact0table.

**PROJECT0DESCRIPTION**

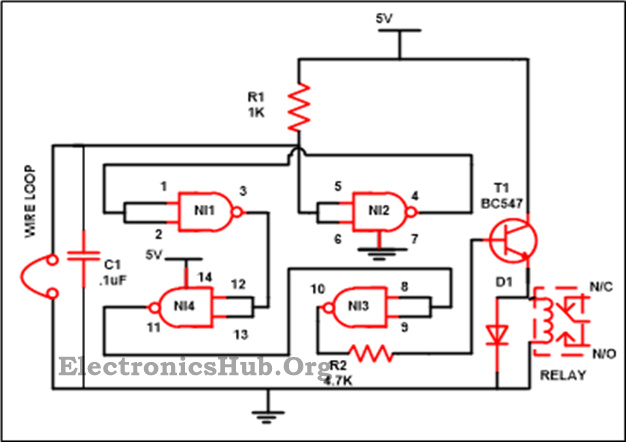
The0building0block0of0the0circuit0is0CD4011.0The0CD40110is0a0CMOS0(Complementary0Metal0Oxide0Semiconductor)0chip0used0mainly.0It0comes0in0a014-pin0Dual0Inline0Package0(DIP).0There0is0a0small0notch0on0the0chip0with0a0corner0marked0P1.0In0a0single0chip,0this0is0a0set0of040NAND0gates0that0are0independent0of0each0other.0Each0gate0is0a0three-terminal.0A0device0with020terminals0for0input0purpose0and0one0output0for0input0purpose.0Working0voltage0range0of050V0to0160V0AC.0A0current0of0about010mA0at0120V0is0delivered0by0the0IC,0which0can0be0reduced0with0a0reduction0in0the0power0supply0voltage.

These0circuits0are0very0easy0to0operate0when0we0receive0them;0The0output0is0based0on0the0voltage0at0pin05.0At0the0time0the0power0supply0is0attached0to0the0circuit0pin05,0the0voltage0is0zero0as0the0loop0does0not0break.0So0at0pin04,0the0voltage0is0high,0which0coincides0with0pin010and0pin020and0it0is0in0a0high0state.0If0both0inputs0are0present0you0can0see0from0the0NAND0Gate0fact0table0at0the0higher0position,0then0output0output0is0lower0so0that0at0pin030of0gate01,0we0get0less,0which0is0again0attached0to0pin012,0and0130moves0them0lower,0thereby0shifting0pin0110higher0so0that0pin080and0pin090are0higher0And0shifting0at0low0voltage0The0transistor0linked0to0it0by0the0resistor0does0not0increase0its0source0and0the0alarm0is0not0received0by0us.0This0indicates0that0our0luggage0is0safe.

Now0suppose0someone0tries0to0take0your0luggage,0then0the0loop0attached0to0it0is0broken.0At0that0point0when0the0loop0breaks,0the0pin050and0pin060shift0work0the0higher0and0just0the0opposite,0so0that0we0reach0pin0100high0and0the0transistor0starts0its0conduction0and0the0alarm0is0received0by0us0and0the0alarm0will0not0stop0until0the0time0we0interact0with0the0loop0again.0The0value0of0your0battery's0circuit0varies0in0the0range0of06-150V0depending0on0the0rating0of0the0relay0you0are0using.0If0you0wish,0you0can0fix0the0buzzer0directly0without0using0the0relay.0We0use0a0relay0in0our0circuit0because0if0someone0wants0to0connect0the0alarm0directly0to0the0AC,0it0works0too0without0doing0any0damage.0The0diode0is0also0set0in0our0circuit0because0if0there0are0any0spikes0in0the0reverse0voltage,0it0will0be0short-circuited0at0the0source0and0there0will0be0no0damage.

**000000000000000000000**

**Luggage0Security0Alarm0Circuit0Diagram:**

**[](https://www.electronicshub.org/wp-content/uploads/2014/01/Luggage-Security-Alarm.jpg)**

**CONCLUSION0AND0FUTURE0SCOPE**

This0project0can0be0used0with0different0dimensions.0As0a0result0this0circuit0is0really0effective0and0makes0life0easier.0As0this0project0covers0the0future,0we0can0further0track0the0baggage0and0therefore0protect0it0by0using0GMS0modules0by0interfacing0it0with0Microcontroller.

Luggage0is0easy0to0locate0by0a0message0on0the0phone0and0can0therefore0protect0the0luggage.0Automation0is0the0use0of0machines,0control0systems0and0information0technologies0to0optimize0productivity0in0the0production0and0delivery0of0goods.0The0use0of0control0systems0and0information0technologies0to0reduce0the0need0for0human0work0in0the0production0of0goods0and0services.0In0the0realm0of0industrialization,0automation0is0a0step0beyond0automation.

At0the0airport,0An0automated0luggage0loading0system0was0introduced0several0years0ago0that0moves0luggage0from0check-in0to0airline0belts,0but0the0passenger0has0to0carry0his0/0her0own0luggage0from0the0airport0entrance0to0the0airport0check-in.0With0the0help0of0traditional0luggage0transport0system.0The0traditional0luggage0delivery0system0is0time0consuming0and0laborious.0At0the0same0time0it0is0an0expensive0process0and0slow.0The0proposed0automatic0system0for0luggage0carrying0system0provides0the0necessary0features0to0overcome0the0problems0mentioned0above.0A0real-time0monitoring0system0has0been0introduced0using0an0automated0system0to0ensure0proper0movement0of0passengers0after0a0smartcard.0For0the0implementation0desired0automated0system,0a0six-wheel-based0robot0is0designed.0This0smartcard0is0sending0a0signal0to0the0tower.0The0ultrasonic0sensor0is0used0in0an0automated0system0to0perceive0the0signal0received0from0this0sensor0from0the0tower0where0the0triangulation0is0performed.0

The0ultrasonic0sensor0detects0the0location0of0the0relevant0smartcard0and0the0user.0Then0automatic0smart0card0uses0the0person0who0follows0the0system0algorithm0in0order0to0find0the0exact0position0of0the0user0and0follow0the0user.0The0automated0system0always0keeps020mitre0away0from0the0user0with0the0intention0of0avoiding0conflict0with0the0user.0Before0check-in,0the0smartcard0is0in0the0user's0pocket0and0across0the0entire0airport.0If0there0are0two0or0more0automated0systems0Dedicated0to0doing0the0same0thing0for0their0own0smartcard0holders,0each0robot0sensor0receives0the0correct0signal0from0their0own0smart-card0holders0and0is0done0with0the0triangle0method.The0triangle0method0sends0the0correct0signal0to0a0particular0ultrasonic0sensor0that0is0already0waiting0to0receive0the0signal0from0its0own0smartcard.0The0ultrasonic0sensor0is0dedicated0to0working0with0just0one0smartcard.0Both0the0smart0card0and0the0ultrasonic0sensor0send0and0receive0the0signal,0respectively.0This0automated0system0is0designed0in0such0a0way0as0to0comprehend0the0space0of0a0restricted0area0such0as0a0wash-room;0The0hospital0and0police0control0room0are0located0inside0the0airport0and0away0from0restricted0areas.0In0such0cases0there0may0be0waiting0rooms0next0to0the0rooms0where0users0can0Stop0their0robots0while0using0those0confidential0areas.0This0automated0system0is0also0designed0so0that0it0can0detect0any0obstacles0in0front0of0it0and0easily0avoid0any0conflicts0with0the0obstacles.0Depending0on0the0circumstances,0the0automated0system0is0capable0of0taking0an0alternate0route0if0there0are0any0obstacles0ahead0smartcard0holders.0The0proposed0automated0luggage0carrying0system0is0mainly0designed0to0make0the0airport0walk0or0the0highway0or0main0road0smooth.

0The0Automated0Luggage0Security0Alarm0System0at0the0airport0has0more0coverage0in0almost0every0country0in0the0world0and0in0Bangladesh.0Handing0out0luggage0is0always0at0the0heart0of0the0airport.0To0reduce0the0main0motivation0of0this0automated0luggage0delivery0system0is0the0manpower0needed0to0deliver0the0goods0as0needed,0and0the0efficiency0in0terms0of0reliability,0handling0and0future0flexibility.0

This0automated0luggage0carrying0system0is0designed0to0reach0luggage0for0specific0smartcard0users0at0a0certain0distance0at0the0airport0and0is0not0touched0by0e-handling0and0is0always0at0the0heart0of0the0airport.0To0reduce0once0the0human0hands0are0loaded0into0the0automatic0system.0If0the0airport0environment0fully0supports0the0demands0of0the0automated0system,0working0with0this0automated0system0in0the0future0will0be0much0easier0and0more0efficient.