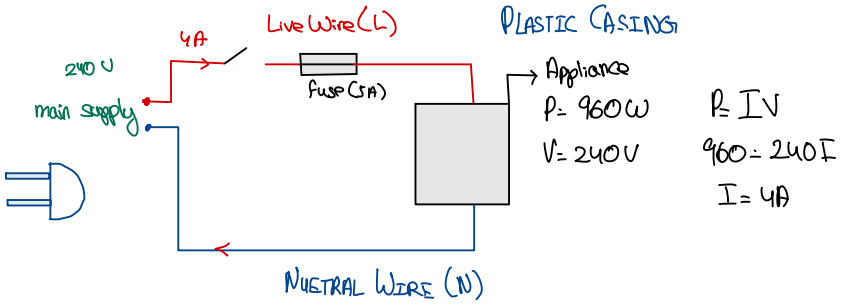
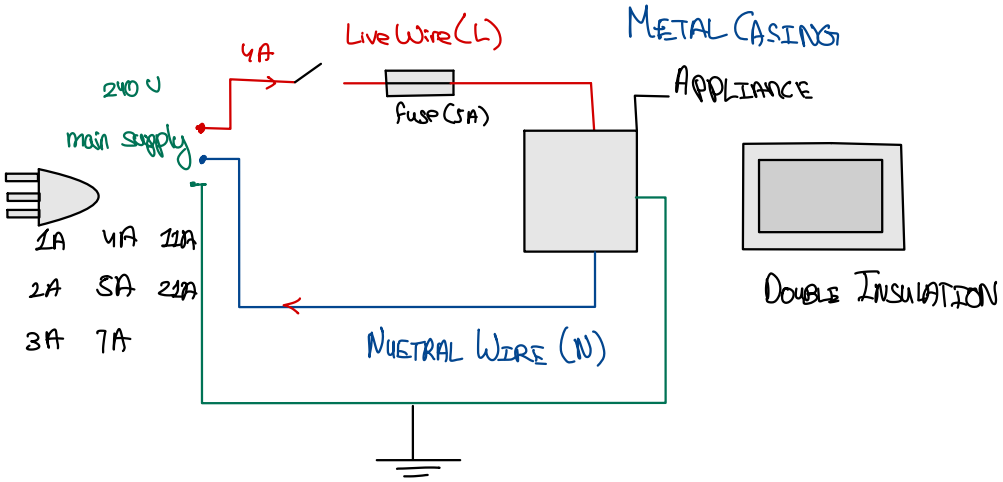
Practical electricity

- Electrical applicances can be connected with either a two pin plug or a 3 pin plug.
- a two pin plug consists of two wires, a live wire and a neutral wire
- The live wire serves to bring the current into the appliance. It is connected to high voltage, that is 240 volts. The neutral wire serves to take the current out of the appliance and back into the main supply.
- The neutral wires is maintained at low voltage that is 0 volts. Since the current enters through the live wires, therefore both the switch and the fuse are placed in the live wire
- Every fuse has a certain fuse rating. The fuse rating of commonly available fuses are: 1A, 2A, 3A, 5A, 7A, 11A, 21A etc. While selecting a fuse, the fuse rating must be slightly greater than the normal working current of the appliance.
- A two pin plug is used with appliances which have their outer casing made out of an insulating material for example plastic. The arraignment for a two pin plug, which connects the appliance to the main supply is shown below



- in situations where the outer casing of the appliance is made out of a metal, we preferably use a three pin plug. The arrangement for a three pin plug is shown below



- under normal situations, if there is no fault in the circuit, the current will enter through the live wire and exit through the neutral wire. This means the earth wire will not be of any relevance.

- If a fault develops in any appliance which causes the live wire to come in contact with the metal casing,(casing becomes live) the earth wire will now serve two purposes

Earth wire function

- it ensures the user will not get an electric shock by allowing the current to flow through an alternate path
- Since earth wire has a lower resistance therefore it draws in a large amount of current from the main supply. As this current enters through the live, the fuse breaks and the appliance stops working. This is necessary so that the fault in the appliance can be corrected

Dangers of electricity

Damaged insulation:

Every cable has a rubber insulation around it, if this insulation gets damaged due to normal wear and tear, the live wire will be exposed. If the user accidentally touches the wire at that point he can get electrocuted, hence damaged insulation is considered to be an electrical hazard

Overheating of cables

Every appliance must be provided with a cable of appropriate thickness depending on the working current of the appliance. Hence, if a thin cable is used in place of a thick cable, it will quickly overheat, and will eventually cause the insulation around it to melt. Therefore overheating of cables is classified as an electrical hazard

Overloading of cable

If multiple appliances are simulataneously connected to a single extension box then this would cause a large amount of current to be drawn into the extension box, if this cable cannot withstand this current it will heat up and melt eventually. Thus overloading is considered an electrical hazard

Damp conditions

Since water is a good conductor of electricity therefore all appliances must be kept away from damp conditions to reduce chances of electric shock.

Short circuit

This refers to current allowed to flow through a shorter path. This condition might arise if the live wire accidentally comes in contact with the neutral wire. Due to a low resistance path a large amount of current will be drawn in through the live wire. If the circuit is not meant to withstand this current, it will quickly

overheat and this would result in a fire hazard hence short circuiting is considered to be an electrical hazard.