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| --- | --- | --- | --- | --- |
| **Main Components** | **Divisions** | | | |
| **Motor Type** | DC | Stepper | Servo | Brushless |
| **Wheels Quantity** | 4 | 3 | 2 | Other |
| **Material Used for the Base** | Wood Base | 3D Print Base | - | - |
| **Wheel Type** | Normal | Spherical | - | - |
| **Assembly Tool Type** | Threaded Fasteners | Wood Screws | Clips | - |

Morphological analysis according to the above table is described as follows:

1. **Design A**

This design would have a triangle wood base with three normal wheels. A DC motor will be used to drive the robot. The accessories will be attached with wood screws. The advantage of this design is the low cost compared to other designs, and the disadvantage is that the efficiency is low.

1. **Design B**

The design has a hexagonal base that required to be printed with 3D printer to be accurate. It requires four wheels to balance the robot through moving. Servo motor is suitable for this design because it required higher torque than other designs. The robot’s accessories will be installed via threaded fasteners. The advantages of this design are that it has more space due to its bigger area and more stability than other designs. The disadvantage is that it has more weight, which required more torque.

1. **Design C**

This design has a cylindrical base with two wheels. The base required to be printed and attached with suitable covers for both ends of the cylinder. The cylinder will contained all the accessories of the robot inside it. The supplements will installed by threaded fasteners. Many holes has to be drilled that will take time and effort. The DC motor fits the design. The advantage is that the cylindrical shape will contain and protect the accessories inside it. The disadvantage is that it has low efficiency.

1. **Design D**

This is the selected design. The design contains a bow base shape that will be printed by 3d printer. The shape selected because it will give the design lighter weight and bigger area. Two wheels will be attached in the design. A brushless motor can be installed. The accessories can be placed in an external box mounted on the top. The advantages of this design are that it has lightweight and it has high speed and efficiency. The disadvantage is that it is an expensive.