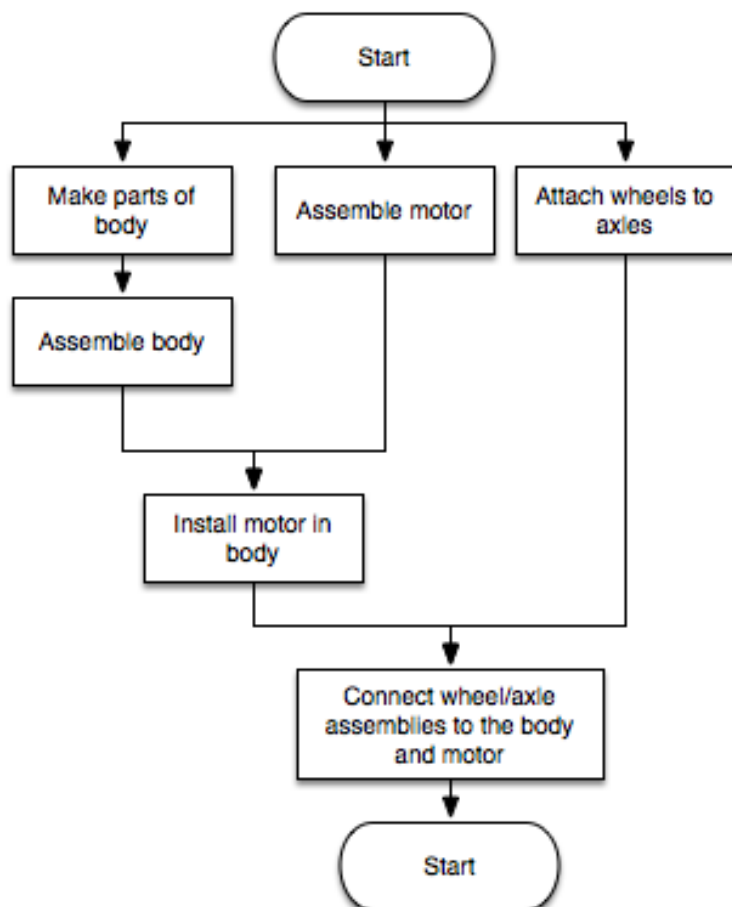
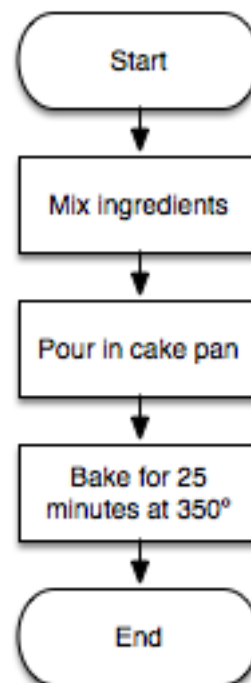


Just Dance Worksheet

Today you will show what you know about algorithms by applying them to a real-life situation. You will work with your assigned group to design an algorithm that your school can use to prepare for a school dance. This algorithm should show the process that the president of an organization would follow if planning to host a dance at the school. Be as detailed as possible so that the process can be followed by anyone.

Step 1 – List the tasks: Now that you and your classmates have brainstormed what needs to be done to have a successful school dance, let's start by listing all the task that you need for your algorithm. Using the tasks you brainstormed as a class and adding any you determine you need as a group, create a list of tasks you need to do to plan and host a dance at the school. List the tasks in the space below.

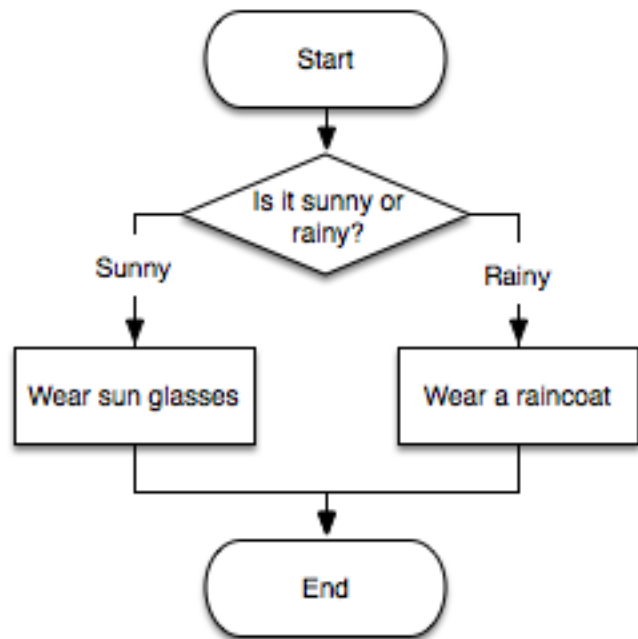
Step 2 – Order the tasks in a flowchart: Now put the tasks in order by creating a basic flowchart as a group by either using visual mapping software or drawing it on paper. Use terminals for the start and end of your algorithm and appropriate shapes for the steps in the process. The flowchart should show the basic process that the president of an organization would follow to plan and host a dance at the school. This is an example of a basic flow chart that you can use as a model.



Step 3 – Determine parallel tasks:

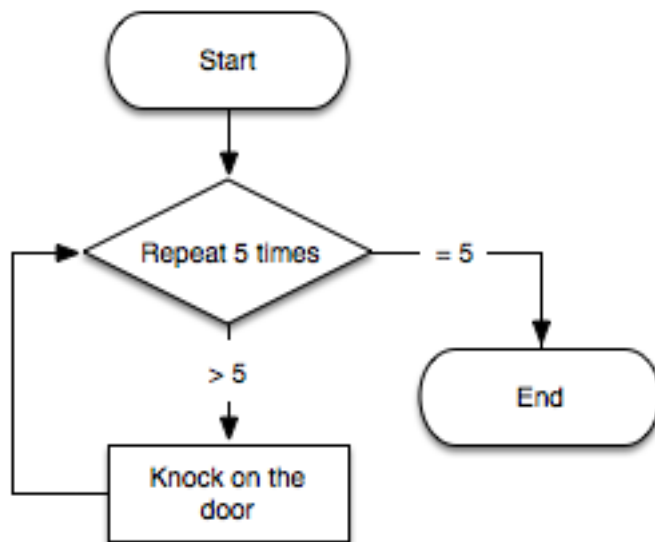
With a basic process outlined, identify if there are any tasks that can be done in parallel and restructure your flow chart to account for these tasks that can be done in parallel. This flowchart gives an example of a process that has both parallel and sequential tasks.

Step 4 – Adding conditional paths: Not all processes are purely sequential or parallel. Sometimes there are steps you take in one situation but different steps for another. Identify a conditional step in the process and modify your process to include a conditional element to it. Be sure to use the appropriate flowchart shapes in your conditional. This flowchart is an example of a conditional process that you can use as a model.

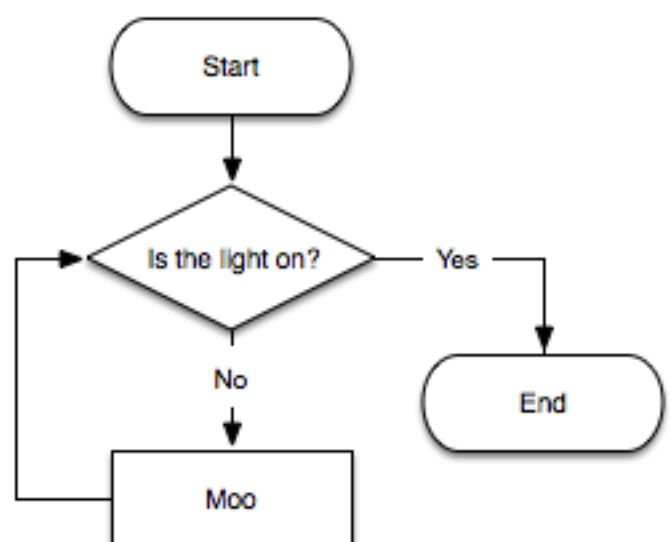


Step 5 – Adding loops: Are there any processes that have to be repeated a certain number of times or until a condition is met? Identify part of the process that has to be done a certain number of times or repeated until a certain condition is met and modify your flowchart to incorporate at least one loop in your algorithm. These flowcharts are examples of a conditional loop and a counting loop.

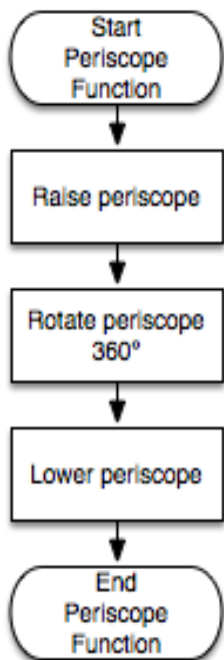
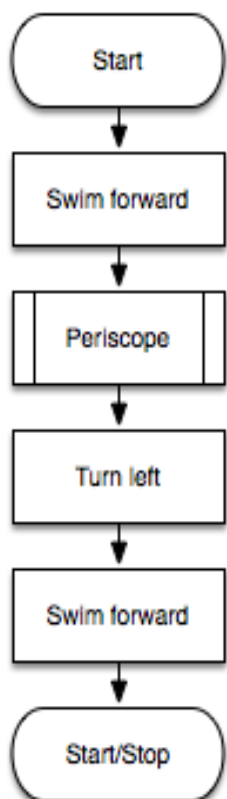
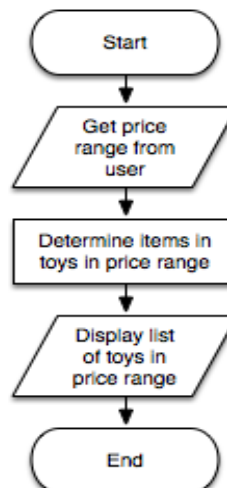
Conditional Loop



Counting Loop



Step 6 – Identifying inputs and outputs: In nearly every algorithm, you will have to gather new information along the way or supply information out to others as part of the process. These are represented by using input or output steps in your flowchart. Identify at least one input and one output that will be needed for your algorithm and modify your flowchart to include at least one of each. This flowchart shows an input and an output as a model.



Step 7 – Simplifying with functions: Good algorithms are easy to read and understand. As you have learned, functions can be used to simplify a process and break up the work. Look at your flowchart and identify where you could improve your flowchart by using a function. Perhaps there are sets of tasks that are repeated in different parts of your flowchart. To simplify your flowchart, these can be made into a function. Perhaps your flowchart is too complex to follow with all the steps and paths created. Identify if there are any spots you could make easier to follow if you split out a group of steps into a separate function. Maybe you have a task that would be easier to accomplish if there were more detailed instructions. Choose at least one change you could make to your flowchart simplify it or make a task easier to follow with a function and modify your flowchart to use functions to do so. These flowcharts show an example a function in a flowchart and the separate flowchart for the function.

Step 8 – Check your work: Before turning in your work, make sure your flowchart includes all of the following:

- Logical order
- Parallel tasks
- Function(s)
- Conditional(s)
- Loop(s)
- Input(s)
- Output(s)
- Uses correct shapes for each process type
- Efficient and easy to follow

Save the file you created OR scan or take a picture of your final flowchart and attach the file to your assignment (or hand in your paper copy if directed by your teacher). Make sure to include all group member names.