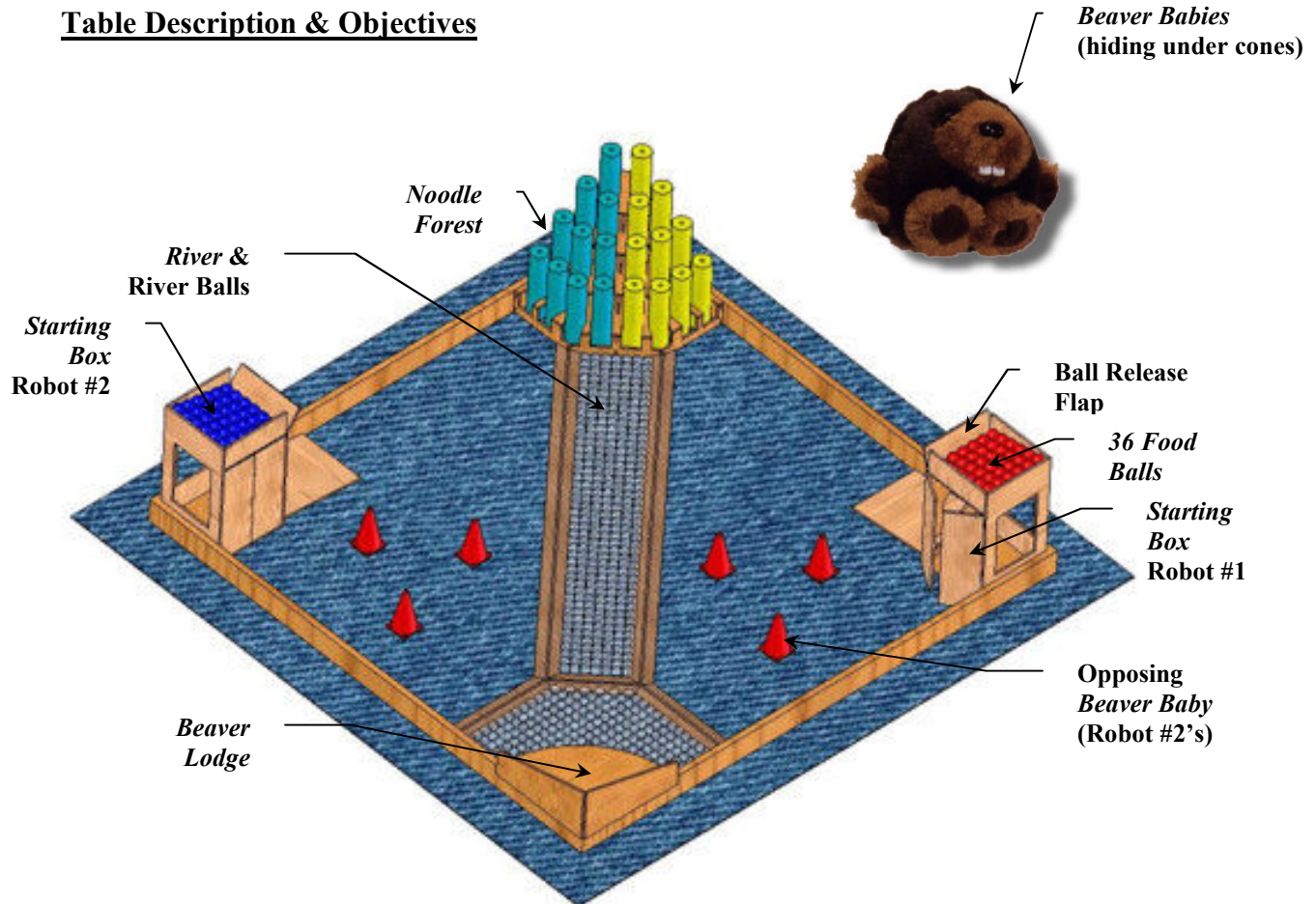


Table Description & Contest Rules  
**Da MIT- Yes MIT!**

Updated: 9 March 2008

Table Description & Objectives



**Your mission: Find, Feed, House & Protect your *Beaver Baby* family!**

Robots begin inside the starting box with the doors closed. Once time starts, you will have 45 seconds to exit the box, make a dam and collect more food than the opposing Robot! In order to make your dam, you will need to harvest your own logs from the forest and place them in the river. You can also release *Food Balls* and collect them inside the *Starting Box* to give to your babies later! Last, but not least, you have three *Beaver Babies* hiding under cones that need to be rescued, but one of your babies is lost and has wandered off to the other side of river! Bring them all to safety by placing them on the *Beaver Lodge*. Be careful while you are on your rescue mission however, as many Robots have gotten stuck in the *River*!

**The fate of the *Beaver Babies* is in your hands!**

### Scoring

Three scoring items: *Beaver Babies*, *Noodle Forest*, and *Food Balls*

Three scoring zones: *Beaver Lodge*, *River*, *Starting Box*

Scoring is a function of item and location and the possible scoring tasks are listed below:

- Removing your color-coded, *Noodles* from the forest. The higher the *Noodle* removed, the higher the score. Opponent's *Noodles* will score for your opponent.
- Placing the felled *Noodles* within the *River's* environs to build a dam. If more than half a *Noodle* crosses the *River* boundaries it counts as being in the *River*. *Noodles* forming a dam are all worth the same, regardless of what level they originated from.
- Saving *Noodles* in the *Starting Box* hole.
- Collecting food balls and placing them into the *Starting Box*. *Food Balls* are located over the *Starting Box*; pulling the door down will release them. *Food Balls* may enter the box via the slot or hole, not the doors. (Note: River balls are smaller and lighter than food balls.) Each Robot may begin with up to 5 food balls onboard, but these must be re-entered through the slot or hole to be scored. Opponent's balls can be absconded with.
- Finding your *Baby Beavers* and placing them on the *Beaver Lodge* is the highest scoring activity with an exponential effect. Two of your *Baby Beavers* are located on your side of the table; one has wandered off and is located on the other side and is worth more. *Beaver Babies* and cones are color coded. *Beaver Babies* may not be removed from the *Beaver Lodge* once scored.

Crossing the *River* is only permitted once a Robot has scored at least once. This year's contest is designed to provide numerous scoring opportunities without (necessarily) having to hinder the opponent's Robot.

The scoring algorithm is as follows:

$$\text{Score} = [(N+1)(M+1)(3O+1)(2^P)]+25Q$$

N – number of *Food Balls* in your *Starting Box* – 1 pt each  
M – total noodle points taken from the *Noodle Forest*  
level 1 – 1 pt  
level 2 – 2 pt  
level 3 – 3 pt  
level 4 – 4 pt

Q – noodles in the *Starting Box* 1 point each  
O – your noodle in *River* 1 point each  
P – number of *Baby Beaver* points in *Beaver Lodge*  
*Beavers* from your side (2) – 1pt each  
*Beavers* from opponent's side (1) – 3 pts each

In the event of a tie, the winner will be the Robot which has consumed less power, as recorded by the control interface.

## Rules & Regulations

### 1. Timing

- a. Each round of the contest is 45 seconds long.
- b. At the end of a round the robots must be stopped.
- c. Judges will wait until all balls and obstacles to stop moving when the round ends, before scoring. Thus, anything in motion (e.g. rolling into a scoring bin) will be allowed to come to rest before the score is calculated.

### 2. Winning & Advancing

- a. Robots start on opposite side of the table in their respective *Starting Boxes*. Failure to exit the box within 10 seconds will constitute a defeat.
- b. The starting box is sized: **16" wide x 16" deep x 23" high**
- c. Seeding rounds will be held during the lab time. Robots will compete against the table unopposed. A contestant's seed will be determined by their points scored. It is against the spirit of the rules to deliberately under-perform so as to seed lower.
- d. The highest scoring robot in each match advances to the next round. However, the top percentage (to be determined) of losers from the first round will advance into the 2<sup>nd</sup> round. Each round will end with an even number of Robots advancing.

### 3. Driving

- a. Contestants must drive (control the movement of) their own Robots – **no substitute drivers**, without an excused absence.
- b. Contestants may have **one** person help drive their Robot (e.g. trigger a mechanism at a certain time, etc.) or to provide coaching at the driving podium.
- c. Contestants and Assistant Drivers must wear safety glasses when in the vicinity of the table. Only some prescription glasses are acceptable.

### 2. Robot Configuration

- a. On the day before the competition, your entire Robot must fit in the *Starting Box* with the door closed. Oversize machines will likely become stuck and expose the operator to ridicule.
- b. Machines will not be weighed this year, it is believed that overly heavy machines will self-penalize through poor performance.
- c. No energy may be stored in elastomers (e.g., rubber bands) prior to the start of the contest. Springs are not elastomers.
- d. Contestants will be responsible for charging the batteries included with their drill for the contest. Contestants may only use one battery per machine.

### 4. Sporting Conduct & Safety

- a. Wanton destruction (or overturning) of an opponent's robot, the contest table and or control equipment is strictly forbidden! Immediate disqualification will result and beavers will gnaw upon your ankles.
- b. In the case of destruction deemed by the judges to be accidental, but severe enough to unfairly influence the competition's outcome the judges may permit repairs and a rematch.
- c. Contestants (i.e. the human being) may not directly interfere with the motion of the table, machines, or control boxes during each round.

## 2.007 Design & Manufacturing I – Spring 2008

---

- d. Any robot components or table items that depart the table will not be re-introduced to the table during a round.
- e. Nets or entanglement devices and projectiles are not permitted. Multi-part Robots are permitted, however until you score, all parts of your machine must remain connected together. Be careful if you create a tethered “botherbot” or barrier because if the tether prevents motion of your opponent, even if it’s “their fault,” you will be disqualified for entanglement.
- f. Robots must be constructed using standard kit parts and using the provided controllers. Custom electronics, such as limit switches, are permitted as are special fasteners, adhesives and decorative elements.
- g. **NO DANGEROUS MACHINES. THE “NAKED PHONE BOOTH” RULE WILL APPLY AT ALL TIMES!**

**Note:** These rules are subject to optimization, and may be altered by the staff to preserve the “spirit” of the contest. Changes to these rules will be posted to the 2.007 website and this document updated.

General questions may be asked of UA’s and Instructors, however, direct all rule clarifications to the Supreme Court - [2.007-court@mit.edu](mailto:2.007-court@mit.edu). The Court’s ruling is final.