## Exercise 9 (10 points) - can be done in pair or individually

- The first lines of all source files must be comments containing names & IDs of all members. Also create file readme.txt containing names & IDs of all members
- Put all files (source, input, readme.txt) in folder <a href="Ex9\_xxx">Ex9\_xxx</a> where xxx = ID of the group representative, i.e. your source files must be in package <a href="Ex9\_xxx">Ex9\_xxx</a> (assumedly in Maven's src/main/java). Input files must be read from this path
- The group representative zips Ex9\_xxx & submits it to Google Classroom. The other members submit only readme.txt. Email submission is not accepted

Use the given image/sound files and source file (MickeyFrame.java). Unzip resources.zip and put this folder in your project folder (Ex9\_xxx). Complete the source file to make program work as follows:

Mickey and falling items (burgers and bombs) are controlled by separate threads





## 1. Mickey control

- 1.1 Walk & Stop buttons to walk & stop
- 1.2 Combo box to set Mickey's speed
- 1.3 Radio buttons to turn left & walk to the left, or turn right & walk to the right. When reaching one side of the frame, he'll appear on the other side

## 2. Item control

- 2.1 More button to random 1 falling
   item (burger or bomb)
- 2.2 Update score when each item hits
   Mickey
- 3. Report total score when closing frame

- 4. All listener classes must be <u>anonymous classes</u>. Add listeners as follows
  - 4.1 Add ActionListener to Walk & Stop buttons, to make Mickey walk or stop
    - Walk → create and start mickeyThread
    - Stop → stop mickeyThread
  - 4.2 Add ItemListener to combo box, to set Mickey's speed
    - Fast = short sleeping time for mickeyThread
    - Slow = long sleeping time for mickeyThread
  - 4.3 Add ItemListener to each radio button, to set Mickey's direction
  - 4.4 Add ActionListener to More button, to add a falling item. It can be done by creating
    & starting a new itemThread (each item is controlled by each thread)
  - 4.5 Add WindowListener to the frame, to show the final score when closing it

- 5. Use mickeyThread & itemThread to make all labels move automatically. Anonymous class can also be applied. Complete method setItemThread and class ItemLabel, using example from setMickeyThread and MickeyLabel
- 6. Complete method updateScore to increase/decrease score when an item hits Mickey. This method requires proper synchronization because it can be called by multiple itemThreads

All given code can be modified as needed