# Session 4 – Fun with variables

The only type of block we have not tried out yet is variables. Variables are a way to store information for sprites to use, keep track of game status, or other calculations.

#### Step 1: Add a variable to your game

Start up your game from week 2. If you don't have the game, you can download it from the scratch website (user feesclub). Select Scratchie, then select the "Variables" block (the orange one) and create two variables, 'score' and 'gameover':



#### Step 2: Add variables to game

Modify the game so that it starts on an event rather than the green flag. Set the score and gameover to 0 at the beginning of the game. What score is needed to end the game?

```
scratchy
             x: -40 y: -124 direction: 90
  Scripts
           Costumes | Sounds
when I receive newgame▼
                                     when 🦊 clicked
wait 0.1 secs
                                    broadcast newgame▼
go to x: 0 y: 0
      key up arrow▼ pressed?
                                     when I receive newgame▼
  change y by 10
                                    set score ▼ to 0
      key down arrow▼ pressed?
                                    set gameover▼ to 0
  change y by -10
                                    wait until score > 25 or score < -10
                                    broadcast gameover▼
      key right arrow ▼ pressed?
  change x by (10)
      key left arrow▼ pressed?
   change x by -10
```

#### Step 3: Modify the monsters

Now change your monsters to use variables. How many points do you get when you catch the red monster?. Create another creature star that will chase Scratchie. Both will keep going until the variable "gameover" is set to '1'.

```
monster
            x: -162 y: -115 direction: 90
                                                            Star
 Scripts
           Costumes
                       Sounds
                                                            x: -162 y: -158 direction: 62
                                                           Costumes V Sounds
                                                 Scripts
when I receive newgame▼
repeat until 🤇 gameover 😑 1
                                                when I receive newgame▼
 wait 1 secs
                                                wait 🚺 secs
 go to x: pick random -210 to 210 y: 260
                                                repeat until 🤇 gameover 😑 🚺
  show
  repeat 16
                                                 go to x: -200 y: -200
   change y by -20
                                                 repeat until (touching scratchy > ?)
    wait 0.05 secs
                                                   point towards scratchy▼
         touching scratchy ▼ ?
                                                   move 10 steps
     set volume to 20 %
                                                   next costume
     hide
                                                   wait 0.2 secs
     change score ▼ by 5
                                                 change score ▼ by -3
     play sound BabyCry ▼
hide
```

## Step 4: Game over

Now we create a script that handles the end of the game. You can add this logic to the stage, Scratchie, or create a new sprite. I created a new one called 'gameover'. The first thing that it does when a new game starts is hide itself.



```
Game over

x: 42 y: -35 direction: 90

Scripts Costumes Sounds

when I receive newgame▼

hide
```

The gameover sprite stops the rest of the sprites by setting 'gameover' to 1. You can also do this kind of thing with events. The sprite checks the score to see if you win or lose then asks if you want to play again.

```
when I receive gameoverv

set gameoverv to 1

show

if score > 25

say You win for 2 secs

else

say You lose, sorry! for 2 secs

ask Play again? and wait

if letter 1 of answer = y

broadcast newgamev

else

show

go to front

say Okay, bye now for 2 secs

stop all
```

### More project ideas

- A list is a variable that can have multiple values. Can you add your score to a list 'highscores'?
- Make another sprite that chases Scratchie in a different way.
- Change the background for each new game
- Darken the background color when gameover = 1, raise it back when gameover = 0