START BLOCK

TRIGGER ON TRUE CONDITION

TRIGGER ON FLAG NUMBER

CALL FLAG NUMBER

WAIT FOR TIME (IN SECONDS)

WAIT FOR TRUE CONDITION

LOOP FOR NUMBER COUNT

LOOP WHILE CONDITION IS TRUE

LOOP FOREVER

IF CONDITION TRUE EXECUTE TOP SEQUENCE ELSE EXECUTE BOTTOM SEQUENCE.

STOP ALL OTHER STRIPS

STOP ALL
ATOMIC: SENSOR BLOCKS

TRIGGER ON COLOR EQUAL TO

WAIT FOR COLOR EQUAL TO

REPORT CURRENT COLOR SEEN BY SENSOR

TRIGGER ON DISTANCE LESS THAN

WAIT FOR DISTANCE LESS THAN

REPORT CURRENT DISTANCE FROM SENSOR

REPORT CURRENT AMBIENT LIGHT LEVEL

TRIGGER ON SOUND LEVEL GREATER THAN

WAIT FOR SOUND LEVEL GREATER THAN

REPORT CURRENT SOUND LEVEL

TRIGGER ON HUB ORIENTATION EQUAL TO

WAIT FOR HUB ORIENTATION EQUAL TO

REPORT CURRENT HUB ORIENTATION
ATOMIC: SENSOR BLOCKS

- REPORT CURRENT HUB ANGLE IN THE X DIMENSION (-90..90)
- REPORT CURRENT HUB ANGLE IN THE Y DIMENSION (-90..90)
- REPORT CURRENT EXTERNAL MOTOR SPEED
- REPORT CURRENT EXTERNAL MOTOR POSITION
- RESET EXTERNAL MOTOR POSITION TO NUMBER
- REPORT CURRENT HUB MOTOR SPEED
- REPORT CURRENT HUB MOTOR POSITION
- RESET HUBS MOTORS POSITION TO NUMBER
- REPORT CURRENT MOTOR A SPEED
- REPORT CURRENT MOTOR A POSITION
- RESET MOTOR A POSITION TO NUMBER
- REPORT CURRENT MOTOR B SPEED
- REPORT CURRENT MOTOR A POSITION
- RESET MOTOR B POSITION TO NUMBER
RUN EXTERNAL MOTOR WITH SPEED (-100..100) FOR TIME (IN SECONDS)

RUN EXTERNAL MOTOR WITH SPEED (-100..100) FOR DISTANCE (IN DEGREES)

START EXTERNAL MOTOR WITH SPEED (-100..100)

STOP EXTERNAL MOTOR

MOVE HUB WITH MOTOR A SPEED (-100..100) AND MOTOR B SPEED (-100..100) FOR TIME (IN SECONDS)

MOVE HUB WITH MOTOR A SPEED (-100..100) AND MOTOR B SPEED (-100..100) FOR DISTANCE (IN DEGREES)

MOVE HUB WITH SPEED (-100..100) AND STEERING (-100..100) FOR TIME (IN SECONDS)

MOVE HUB WITH SPEED (-100..100) AND STEERING (-100..100) FOR TIME (IN DEGREES)

START MOVING HUB WITH MOTOR A SPEED (-100..100) AND MOTOR B SPEED (-100..100)

START MOVING HUB WITH SPEED (-100..100) AND STEERING (-100..100)

STOP MOVING HUB
RUN MOTOR A WITH **SPEED** (-100..100) FOR **TIME** (IN SECONDS)

RUN MOTOR A WITH **SPEED** (-100..100) FOR **DISTANCE** (IN DEGREES)

START MOTOR A WITH **SPEED** (-100..100)

STOP MOTOR A

RUN MOTOR B WITH **SPEED** (-100..100) FOR **TIME** (IN SECONDS)

RUN MOTOR B WITH **SPEED** (-100..100) FOR **DISTANCE** (IN DEGREES)

START MOTOR B WITH **SPEED** (-100..100)

STOP MOTOR B
ATOMIC: SOUND AND LIGHT BLOCKS

- Set Hub Light to **COLOR**
- Set Sensor Light to **COLOR**
- Play **SOUND** from Sound Library
- Play **SOUND** from Sound Library with Current Filters
- Set Pitch **FILTER** (-100..100)
- Set Distortion **FILTER** (0..100)
- Set Echo **FILTER** (0..100)
- Clear Filters
**ATOMIC: MATH BLOCKS**

- **READ VARIABLE** (ICON)

- **WRITE TO VARIABLE** (ICON) WITH **NUMBER**

- **RANDOMIZE BETWEEN FIRST **NUMBER** AND SECOND **NUMBER**

- **NUMBER EQUAL TO **NUMBER**

- **NUMBER LESS THAN **NUMBER**

- **NUMBER GREATER THAN **NUMBER**

- **NUMBER NOT EQUAL TO **NUMBER**

- **NUMBER PLUS **NUMBER**

- **NUMBER MINUS **NUMBER**

- **NUMBER MULTIPLY WITH **NUMBER**

- **NUMBER DIVIDE BY **NUMBER**
GETTING STARTED BLOCKS

START BLOCK

WAIT FOR TIME

TRIGGER ON SENSOR LESS THAN

MOVE 1 GRID SPACE FORWARD

MOVE BACK

MOVE FORWARD HALF A GRID AND TURN 45 DEGREES TO THE LEFT

MOVE FORWARD HALF A GRID AND TURN 45 DEGREES TO THE RIGHT

ROTATE 180 DEGREES TO THE RIGHT

MOVE FAST 360 DEGREES TO THE LEFT

MOVE FAST FORWARD 1 GRID SPACE  MUSIC SOUND

MOVE FAST BACK 1 GRID SPACE  START PROPELLER

GREETING SOUND  ROTATE PROPELLER

HORN SOUND  FART
VERNIE: FLOW BLOCKS

- START BLOCK
- TRIGGER ON FLAG
- CALL FLAG
- WAIT FOR TIME
- LOOP FOR COUNT
- LOOP FOREVER
- STOP ALL OTHER STRIPS
- STOP ALL
VERNIE: SENSOR BLOCKS

- TRIGGER ON HANDSHAKE
- WAIT FOR HANDSHAKE
- TRIGGER ON DIZZY
- TRIGGER ON EXHAUSTED
- TRIGGER ON INACTIVITY
- TRIGGER ON COLOR
- WAIT FOR COLOR
- TRIGGER ON DISTANCE
- WAIT FOR DISTANCE
- TRIGGER ON SOUND LEVEL
- WAIT FOR SOUND LEVEL
- WAIT FOR BUTTON
MOVE NUMBER OF GRID SPACE FORWARD

MOVE NUMBER OF GRID SPACE BACK

ROTATE NUMBER OF DEGREES TO THE LEFT

ROTATE NUMBER OF DEGREES TO THE RIGHT

MOVE IN AN ARC TO THE LEFT. VERNIE SHOULD END UP NUMBER OF GRID SPACE FORWARD, NUMBER GRID SPACE TO THE LEFT AND BE ROTATED 90 DEGREES TO THE LEFT.

MOVE IN AN ARC TO THE RIGHT. VERNIE SHOULD END UP NUMBER OF GRID SPACE FORWARD, NUMBER GRID SPACE TO THE LEFT AND BE ROTATED 90 DEGREES TO THE RIGHT.

ROTATE SLOWLY NUMBER OF DEGREES TO THE LEFT

ROTATE FAST NUMBER OF DEGREES TO THE RIGHT.

ROTATE RANDOM AMOUNT OF DEGREES

MOVE NUMBER OF GRID SPACE FAST FORWARD

SET HEAD POSITION TO LOOK LEFT WITH SPEED

SET HEAD POSITION TO LOOK STRAIGHT WITH SPEED

SET HEAD POSITION TO LOOK RIGHT WITH SPEED

MOVE HEAD RANDOMLY
VERNIE: SOUND BLOCKS

- SMALL TALK PHRASES
- EXCITED PHRASES
- HAPPY PHRASES
- QUESTION PHRASES
- BASIC PHRASES
- SPECIAL PHRASES
- FEELING BAD PHRASES
- ANGRY PHRASES
- COWBOY PHRASES
- COP QUESTION PHRASES
- POLICE OFFICER PHRASES

- CROWD REACTIONS SOUNDS
- PLAY MUSIC
- PLAY SOUND FROM SOUND LIBRARY
- BEATBOXING
VERNIE: ACTION BLOCKS

SHOOT

DANCE SLOW

DANCE FAST

DISCO LIGHTS

FART

PUNCH

ANGRY VERNIE (EDITABLE)

EXCITED VERNIE (EDITABLE)

HAPPY VERNIE (EDITABLE)

SAD VERNIE (EDITABLE)

ACTIVATION
VERNIE: INTERACTION BLOCKS

AIMING LEFT/RIGHT UNTIL A LOUD SOUND IS HEARD

DUEL WITH VERNIE TO SEE WHO IS FASTER
User should press the orange button on the tablet as soon as Vernies light turns green.

SHOW VERNIE YOUR IDENTIFICATION
The user just needs to put something infront of the sensor on Vernie’s chest

USE THE SLIDER TO MAKE SCRATCHING SOUNDS

TAKE CONTROL OF VERNIE TO RACE THROUGH A TRACK.
Hold down the button to speed up, let go to slow down. Use slider to control steering.

MAKE A GOLF SWING.
Equip Vernie with his golf club in his right hand

USE THE JOYSTICK TO MOVE VERNIE AROUND

MOVE UNTIL WALL
Vernie will move until there is something in front of his sensor.
VERNIE: MATH BLOCKS

COUNTDOWN

RANDOMIZE BETWEEN FIRST NUMBER AND SECOND NUMBER
FRANKIE: FLOW BLOCKS

- START BLOCK
- TRIGGER ON FLAG
- CALL FLAG
- WAIT FOR TIME
- LOOP FOR COUNT
- LOOP FOREVER
- STOP ALL OTHER STRIPS
- STOP ALL
FRANKIE: SENSOR BLOCKS

TRIGGER ON MILKBOTTLE COLOR

TRIGGER ON CANDLE COLOR

TRIGGER ON HEAD UP ORIENTATION

TRIGGER ON LYING ON BACK ORIENTATION

TRIGGER ON TAIL UP ORIENTATION

TRIGGER ON PETTING

TRIGGER ON INACTIVITY

TRIGGER ON COLOR

WAIT FOR COLOR

TRIGGER ON DISTANCE

WAIT FOR DISTANCE

TRIGGER ON SOUND LEVEL

WAIT FOR SOUND LEVEL
SET EYES TO LOOK LEFT WITH SPEED

SET EYES TO LOOK STRAIGHT DOWN WITH SPEED

SET EYES TO LOOK RIGHT WITH SPEED

WAG TAIL WITH SPEED

STAND UP

SIT DOWN
FRANKIE: SOUND BLOCKS

- Harmonica Tone
- Harmonica Riffs Number
- Frankie Singing Blues
- Frankie Singing Birthday Song
- Backing Music Intro
- Backing Music
- Play Sound From Sound Library
FRANKIE: ACTION BLOCKS

HAPPY

EXCITED

PURRING

DRINKING

EATING

SLEEPING

SURPRISED

SAD

ANNOYED

ANGRY

FIERCE
FRANKIE: ACTION BLOCKS

INACTIVE

BLOW

FART

BURP

PHARAOH (EDITABLE)

ANGRY (EDITABLE)

PURRING AND HAPPY (EDITABLE)
FRANKIE: INTERACTION BLOCKS

- NEED FOR MILKBOTTLE
- NEED FOR WHITE FISH
- NEED FOR BEING HELD UP
- NEED FOR LYING DOWN
- HARMONICA RIFF
  Riff depends on color currently seen
FRANKIE: MATH BLOCKS

RANDOMIZE BETWEEN FIRST NUMBER AND SECOND NUMBER
GUITAR 4000: FLOW BLOCKS

- START BLOCK
- WAIT FOR TIME
- LOOP FOR COUNT
- LOOP FOREVER
GUITAR 4000: SENSOR BLOCKS

- Trigger on strum up or down
- Trigger on strumming speed
- Trigger on strum up or down and in the yellow fret
- Trigger on strum up or down and in the green fret
- Trigger on strum up or down and in the red fret
- Trigger on strum up or down and in the blue fret
- Trigger on strum up or down and in the white fret
- Trigger on guitar orientation up
- Trigger on 1st beat in a 4/4 time signature
- Trigger on 2nd and 4th beat in a 4/4 time signature
- Trigger on 3 times in a 4/4 time signature
- Trigger on each beat in a 4/4 time signature
GUITAR 4000: SENSOR BLOCKS

TRIGGER ON 5 TIMES IN A 4/4 TIME SIGNATURE

TRIGGER ON 7 TIMES IN A 4/4 TIME SIGNATURE

TRIGGER ON 9 TIMES IN A 4/4 TIME SIGNATURE

TRIGGER ON 12 TIMES IN A 4/4 TIME SIGNATURE

TRIGGER ON TAP

REPORT THE GUITAR FRET DISTANCE

REPORT THE GUITAR ANGLE IN THE Y DIMENSION

REPORT THE WHAMMY BAR POSITION

REPORT THE WHEEL POSITION
GUITAR 4000: SOUND BLOCKS

ACUSTIC GUITAR CHORDS

ACUSTIC GUITAR CHORDS PLAYED WITH RHYTHM

ACUSTIC GUITAR CHORDS PLAYED WITH PICKERING

ACUSTIC GUITAR CHORDS PLAYED WITH A GALLOPING RHYTHM

DISTROTED GUITAR CHORD STRUMMED UP

DISTROTED GUITAR CHORD STRUMMED DOWN

DISTROTED GUITAR CHORD PLAYED WITH RHYTHM

ELECTRIC GUITAR CHORDS

ELECTRIC GUITAR CHORDS PLAYED WITH RHYTHM

ELECTRIC GUITAR CHORDS PLAYED WITH PICKERING

BASS GUITAR TONE

BASS GUITAR CHORDS PLAYED WITH PICKERING

SOLO RIFF NUMBER
VIOLIN SOUND AT *SPEED*

BASS DRUM SOUND *NUMBER*

SNARE DRUM/TOM TOM DRUM SOUND *NUMBER*

CYMBAL SOUND *NUMBER*

PERCUSSION SOUND *NUMBER*

FART *CHORDS*

ANIMAL SOUND *NUMBER*

PLAY *MUSIC*

CROWD REACTIONS *SOUNDS*

SET PITCH *FILTER*

SET DISTORTION *FILTER*

SET ECHO *FILTER*

PLAY *SOUND FROM SOUND LIBRARY*
ACUSTIC GUITAR
Chord depends on distance on guitar fret

ACUSTIC GUITAR PLAYED WITH RHYTHM
Chord depends on distance on guitar fret

ACUSTIC GUITAR PLAYED WITH PICKERING
Chord depends on distance on guitar fret

ACUSTIC GUITAR PLAYED WITH GALLOPING RHYTHM
Chord depends on distance on guitar fret

DISTROTION GUITAR
Chord depends on distance on guitar fret

DISTROTION GUITAR PLAYED WITH RHYTHM
Chord depends on distance on guitar fret

ELECTRIC GUITAR
Chord depends on distance on guitar fret

ELECTRIC GUITAR PLAYED WITH RHYTHM
Chord depends on distance on guitar fret

ELECTRIC GUITAR PLAYED WITH PICKERING
Chord depends on distance on guitar fret

BASS GUITAR
Tone depends on distance on guitar fret

BASS GUITAR PLAYED WITH PICKERING
Tone depends on distance on guitar fret

SOLO GUITAR
Riff depends on distance on guitar fret

VIOLIN
Sound depends on speed of strumming
MTR4: FLOW BLOCKS

- START BLOCK
- TRIGGER ON FLAG
- CALL FLAG
- WAIT FOR TIME
- LOOP FOR COUNT
- LOOP FOREVER
- STOP ALL OTHER STRIPS
- STOP ALL
MTR4: SENSOR BLOCKS

TRIGGER ON COLOR

WAIT FOR COLOR

TRIGGER ON DISTANCE

WAIT FOR DISTANCE

TRIGGER ON SOUND LEVEL

WAIT FOR SOUND LEVEL

WAIT FOR BUTTON
MTR4: MOVEMENT BLOCKS

MOVE NUMBER OF GRID SPACE FORWARD

MOVE NUMBER OF GRID SPACE BACK

ROTATE NUMBER OF DEGREES TO THE LEFT

ROTATE NUMBER OF DEGREES TO THE RIGHT

MOVE IN AN ARC TO THE LEFT. VERNIE SHOULD END UP NUMBER OF GRID SPACE FORWARD, NUMBER GRID SPACE TO THE LEFT AND BE ROTATED 90 DEGREES TO THE LEFT.

MOVE IN AN ARC TO THE RIGHT. VERNIE SHOULD END UP NUMBER OF GRID SPACE FORWARD, NUMBER GRID SPACE TO THE LEFT AND BE ROTATED 90 DEGREES TO THE RIGHT.

ROTATE SLOWLY NUMBER OF DEGREES TO THE LEFT

ROTATE FAST NUMBER OF DEGREES TO THE RIGHT.

MOVE NUMBER OF GRID SPACE FAST FORWARD
MTR4: SOUND BLOCKS

- CROWD REACTIONS SOUNDS
- PLAY MUSIC
- PLAY SOUND FROM SOUND LIBRARY
MTR4: ACTION BLOCKS

- SHOOT
- DANCE SLOW
- DANCE FAST
- DISCO LIGHTS
- FART
- PUNCH
- ANGRY VERNIE
- EXCITED VERNIE
- HAPPY VERNIE
- SAD VERNIE
- ACTIVATION
- DQW
- QWDQW
AIMING LEFT/RIGHT UNTIL A LOUD SOUND IS HEARD

TAKE CONTROL OF VERNIE TO RACE THROUGH A TRACK.
Hold down the button to speed up, let go to slow down. Use slider to control steering.

USE THE JOYSTICK TO MOVE VERNIE AROUND

USE THE SLIDER TO MAKE SCRATCHING SOUNDS

MOVE UNTIL WALL
Vernie will move until there is something in front of his sensor.
RANDOMIZE BETWEEN FIRST NUMBER AND SECOND NUMBER
AUTO BUILDER: FLOW BLOCKS

- START BLOCK
- TRIGGER ON FLAG
- CALL FLAG
- WAIT FOR TIME
- LOOP FOR COUNT
- LOOP FOREVER
- STOP ALL OTHER STRIPS
- STOP ALL
AUTO BUILDER: SENSOR BLOCKS

- Trigger on Color

- Wait for Color

- Trigger on Distance

- Wait for Distance

- Trigger on Sound Level

- Wait for Sound Level
AUTO BUILDER: MOVEMENT BLOCKS

- Move convey belt with **SPEED** for **TIME** (in seconds)
- Move convey belt with **SPEED** to **POSITION**
- Pick up brick
- Place brick
- Move grapper up with **SPEED**
- Move grapper down with **SPEED**
- Move grapper with **SPEED** to **POSITION**
- Rotate spinner with **SPEED** for **TIME** (in seconds)
AUTO BUILDER: SOUND BLOCKS

CROWD REACTIONS SOUNDS

PLAY MUSIC

PLAY SOUND FROM SOUND LIBRARY
AUTO BUILDER: ACTION BLOCKS

- PICK UP BLACK 2X4 BRICK
- PICK UP GREEN 2X2 BRICK
- PICK UP BLACK 4X4 WITH ANGLE PLATE
- PICK UP GRAY 2X2 PLATE
- PICK UP WHITE 2X4 BRICK WITH PRINT
- ASSEMBLE A RANDOM MINI VERNIE
- DISPLAY MINI VERNIE
- PUSH OUT MINI VERNIE
AUTO BUILDER: INTERACTION

AIMING LEFT/RIGHT UNTIL A LOUD SOUND IS HEARD

DUEL WITH VERNIE TO SEE WHO IS FASTER
User should press the orange button on the tablet as soon as Vernies light turns green.
AUTO BUILDER: MATH BLOCKS

COUNTDOWN

RANDOMIZE BETWEEN FIRST NUMBER AND SECOND NUMBER
EXAMPLE OF IF ELSE
EXAMPLE OF FLAGS
EXAMPLE OF VARIABLE
EXAMPLE OF PITCH FILTERS
EXAMPLE OF CALIBRATING AND USING TO POSITION

EXAMPLE OF CREATING A MODEL BLOCK
EXAMPLE OF CREATING A REPORTER
EXAMPLE OF CREATING A TRIGGER