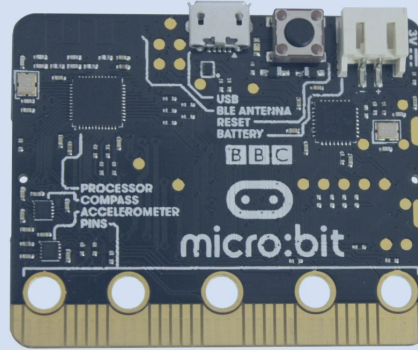# Registration and Timing System

RATS

RATS components
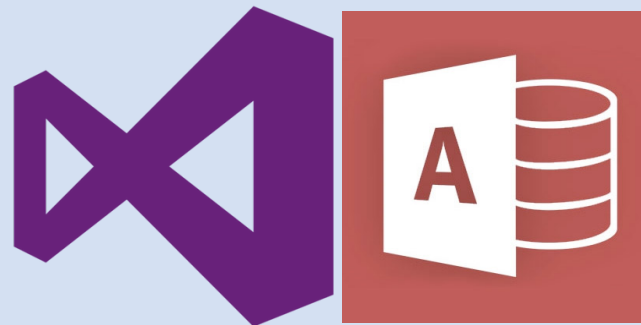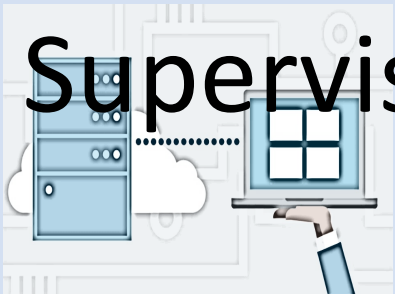

I/O

BBC
micro:bit
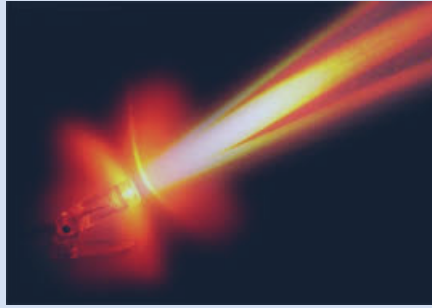
GPIO

Timing

Arduino

USB serial

Supervision &
Reporting

VisualBasic
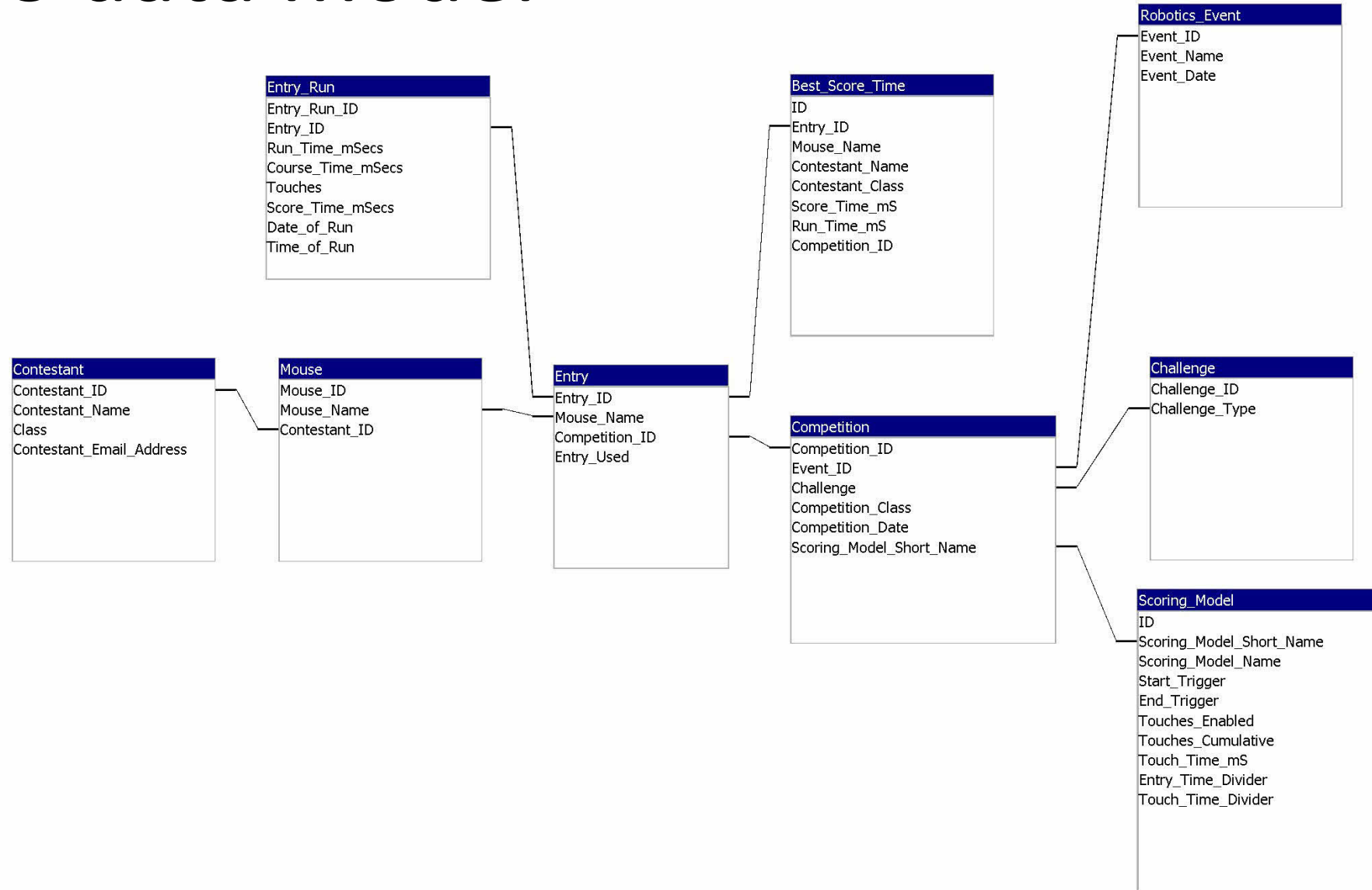Access

RATS Arduino to PC interface messages

				Messages in the format" <encoded_message_type,value>CrLf"
Supported message types:				
ENCODED	MESSAGE TYPE	DIRECTION TX	TX FREQENCY	COMMENTS
98	NewMouse	PC to Arduino	Event Driven	A new mouse has been selected in the windows supervision application (value argument will always be passed as 0)
1	MazeTime	Arduino to PC	100 msec	Length of time in 100 millisecond units that the current mouse has been active in the maze
2	SplitTime	Arduino to PC	10 msec	Length of time in 10 millisecond units for the current mouse on its current run (only used to display current run time)
3	RunTime	Arduino to PC	Event Driven	Length of time in 10 millisecond units for a run that has just completed (definitive time used to calculate score time)
4	TimerState	Arduino to PC	Event Driven	Timing gates reported state(Valid values: 0,1,2,3,4,5)
				state 0=claibrating;1=waiting start present; 2=robot in start cell;
				state 3=run started; 4=run in progress; 5=run complete
71	Strigger	Arduino to PC	Event Driven	New value of Start Gate trigger (Valid values: ON, OFF)
72	Ftrigger	Arduino to PC	Event Driven	New value of Finish Gate trigger (Valid values: ON, OFF)
73	Ctrigger	Arduino to PC	Event Driven	New value of Mouse in Start Cell trigger (Valid values: ON, OFF
81	SGLevel	Arduino to PC	100 msec	Intensity level being received by Start Gate phototransistor
82	SGPot	Arduino to PC	100 msec	Value read from Start Gate potentiometer
83	FGLevel	Arduino to PC	100 msec	Intensity level being received by Finish Gate phototransistor
84	FGPot	Arduino to PC	100 msec	Value read from Finish Gate potentiometer
85	SCLevel	Arduino to PC	100 msec	Intensity level being received by Mouse in Start Cell phototransistor
86	SCPot	Arduino to PC	100 msec	Value read from Mouse in Start Cell potentiometer
99	SetMode	PC to Arduino	Event Driven	Controls the Arduino mode (Valid values: TIMER (normal timing mode), CALIBRATION (start returning calibration data)

RATS live demo – timing & calibration

RATS data model

Entry_Run
- Entry_Run_ID
- Entry_ID
- Run_Time_mSecs
- Course_Time_mSecs
- Touches
- Score_Time_mSecs
- Date_of_Run
- Time_of_Run

Best_Score_Time
- ID
- Entry_ID
- Mouse_Name
- Contestant_Name
- Contestant_Class
- Score_Time_mS
- Run_Time_mS
- Competition_ID

Robotics_Event
- Event_ID
- Event_Name
- Event_Date

Contestant
- Contestant_ID
- Contestant_Name
- Class
- Contestant_Email_Address

Mouse
- Mouse_ID
- Mouse_Name
- Contestant_ID

Entry
- Entry_ID
- Mouse_Name
- Competition_ID
- Entry_Used

Competition
- Competition_ID
- Event_ID
- Challenge
- Competition_Class
- Competition_Date
- Scoring_Model_Short_Name

Challenge
- Challenge_ID
- Challenge_Type

Scoring_Model
- ID
- Scoring_Model_Short_Name
- Scoring_Model_Name
- Start_Trigger
- End_Trigger
- Touches_Enabled
- Touches_Cumulative
- Touch_Time_mS
- Entry_Time_Divider
- Touch_Time_Divider

RATS live demo – Registration

Registration and Timing System

RATS

Interfacing further timers?

- Line Follower
- Drag Race