MatchMaker™ NextGEN

version 1.2

equations

This document describes a very useful feature of MatchMaker NextGEN™—the ability to use equations to define complex point assignments in Rule Sets.

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Warranty.

MatchMaker™ quiz equipment and supplies are warranted against defects in materials and workmanship for one year from the date of purchase. Should your equipment fail during that period, please call us to request a replacement.

MATCHMAKER NEXTGEN: EQUATIONS

The MatchMaker line of quiz equipment is the most versatile available today and when coupled with our NextGEN™ software, you have a powerful combination that will add new life to your quiz matches.

Our NextGEN™ software comes preconfigured with rules for all the major denominations, but what if your rules are a bit unusual? For instance, suppose you have a top-10 competition and want to make the point value of questions dependent upon the number of quizzers remaining in the match? Or maybe foul deductions occur only on even fouls.

This is where equations are valuable. Anywhere that a point value can be assessed, you can use a fixed number or an equation to define its value.

The following sections discuss the use of operators, functions, and variables to define these expressions.

OPERATORS

Most equations require some sort of operator: arithmetic, logical or comparision. This section defines these operators and their evaluation precedence.

Arithmetic Operators

Arithmetic operators perform basic arithmetic tasks and are listed below:

+	addition
-	subtraction
*	multiplication
/	division

EXAMPLES OF USE:

```
m_EligibleQuizzers / 10
m_ScheduleQuestions - m_CurrentQuestionNumber
20 + Min(2, m_TotalTeams)
```

Comparison Operators

Often it is useful to compare two numbers and then make a decision based on the result of that comparision. These operators work in conjunction with the IF-THEN-ELSE statement defined below:

<	less than
>	greater than
=	equal to
<=	less than or equal to
>=	greater than or equal to
!=	not equal to

EXAMPLES OF USE:

```
if (m_CurrentQuestion > 17, 20, 10)
if (t_Errors >= 5, -10, 0)
if ( DivBy(t_Fouls, 2), -10, 0)
```

Logical Operators

Logical operators allow you to combine two (or more) comparisons into one logical expressions.

&&	logical AND
||	logical OR

EXAMPLE OF USE:

```
if ((t_Fouls > 3) || (t_Errors >= 5), 20, 10)
```

Operator Precedence

In any mathematical expression that includes operators, operator precedence is important. For instance, how do you evaluate 2+3*5. The answer can be either 25 or 30, depending on operator precedence. You add first, then multiply, or multiply first, then add. The following table gives the order that operations are performed. When operators share

the same precedence level, the one that occurs first (left to right) will evaluate first.

1	( )
2	* /
3	+ -
4	< > = <= >= !=
5	&& ||

When in doubt, enclose your expressions in parentheses, since these have the highest precedence level and anything inside parentheses will be evaluated first before other operations.

FUNCTIONS

Functions take from one or two expressions and return a value. Following is a table of supported functions:

Max(a,b)	returns the greater of two numbers
Min(a,b)	returns the lesser of two numbers
DivBy(a,b)	true if a is evenly divisible by b; else false
Floor(a)	rounds a number down (the floor)
Ceiling(a)	rounds a number up (the ceiling)

EXAMPLES OF USE:

```
Max(m_CurrentQuestion, 17)
DivBy(t_Fouls, 2)
```

MACROS

Macros take from two to four expressions and provide some additional functionality to the software. Following is a table of supported macros:

`Buttons2(a,b)`	prompts for point value of response (e.g. two buttons "10" and "20")
`Buttons3(a,b,c)`	prompts for point value of response (e.g. three buttons "10","20", and "30")
`Buttons4(a,b,c,d)`	prompts for point value of response (e.g. four buttons "10","20","30", and "40")

EXAMPLES OF USE:

```
Buttons2(10,20)
```

```
Buttons3(20,30,40)
```

If Buttons2 is used as a function definition for points correct for a question, then instead of prompting the user for whether the quizzer was correct or incorrect, he will see buttons of "10" and "20" and "incorrect" (in the above Buttons2(10,20) example). You can also replace the "incorrect" button with values using the Buttons macros. This allows deducting a variable point value depending on the question type.

VARIABLES

Match Variables

Match variables are match-wide. That is, they either indicate match state or a sum across teams or competing quizzers. Available match variables are listed below:

`m_TotalTeams`	Total teams in match
`m_InitialQuizzers`	Initial quizzers in match
`m_EligibleQuizzers`	Quizzers eligible for question
`m_EliminatedQuizzers`	Quizzers eliminated from match
`m_CurrentQuestionNumber`	Curent question number

m_ScheduledQuestions	Total questions to be asked in match
m_QuestionsRemaining	Questions remaining in match
m_QuestionsAttempted	Total questions attempted by all teams
m_QuestionsAnsweredCorrectly	Total answered correctly by all teams
m_Errors	Total errors by all teams
m_Fouls	Total fouls by all teams

Team Variables

Team variables are team-wide. That is, they indicate something about the currently selected team. Available team variables are listed below:

t_Score	Total team score
t_QuestionsAnsweredCorrectly	Questions answered correctly by team
t_QuizzersWithCorrectResponse	Total quizzers answering correctly
t_Errors	Errors for team
t_QuizzersWithError	Quizzers with an error on team
t_AttemptedQuestions	Questions attempted by team
t_QuizzersAttemptingQuestion	Quizzers attempting a question
t_Fouls	Fouls for team
t_QuizzersWithFoul	Quizzers with a foul
t_QuizzersQuizzedOut	Total quizzers who have quizzed out
t_QuizzersErroredOut	Total quizzers who have errored out
t_QuizzersFouledOut	Total quizzers who have fouled out
t_AppealsDenied	Total number of denied appeals

Quizzer Variables

The last set of variables are quizzer-related. They tell us things of interest about the current quizzer. Available quizzer variables are listed below:

q_Score	Current score of quizzer
q_QuestionsAnsweredCorrectly	Total questions answered correctly
q_Errors	Total errors commited by quizzer
q_QuestionsAttempted	Total questions attempted
q_QuestionsEligible	Questions for which quizzer was eligible
q_Fouls	Total fouls commited by quizzer

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