Age of Empires ECG combat results calculator

Developer's wishlist

V1.0 – V1.2

Developed by: Kory

Focus: Making it calculate the results of a standard, bombardment, monk, and archer round of combat given information about each player's battle participants, event cards, and technologies

Release date: ~ 2018 with a couple of minor updates since then

Status: Abandonware. No longer maintaining this

Implemented	Feature
Storing information about battle participations	
☒	**Using struct to store:**

Using struct to store:

- The name of the entity **(1)** (including civilization) **(4)**

`string unitName`

- The armour class **(4)**

`bool armorClass[20];`

• Archer [0]	• Ship [11]
• Building [1]	• Siege_Weapon [12]
• Camel [2]	• Spearman [13]
• Castle [3]	• Standard_Building [14]
• Cavalry [4]	
• Cavalry_Archer [5]	• Stone_Defence [15]
• Eagle_Warrior [6]	• Turtle_Ship [16]
• Gunpowder_Unit [7]	• Unique_Unit [17]
	• Wall_&_Gate [18]
• Infantry [8]	• War_Elephant [19].
• Monk [9]	
• Ram [10]	

- The attack bonuses vs amour classes **(5)**
- The health **(7)**

`int unitHealth;`

- The ranged damage (RD) value **(8)**

<table>
<tr><td></td><td>

```
int rangedDamage;
```

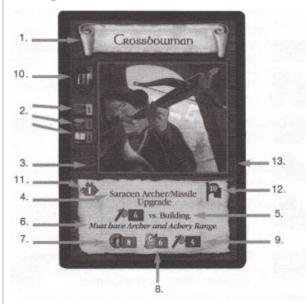- The standard damage (SD) value **(9)**

```
int standardDamage;
```

- The Age pre-requisite of the card **(10)**

```
int unitAge;
```

- The point value **(12)**. Sum of resource cost. What's awarded for killing the entity

```
int pointValue;
```

- The garrison value, which appears on some buildings in case it's ever relevant

```
int garrisonValue;
```

- The quantity of the entity

```
int unitQuantity;
```

Example "Crossbowman" card

Using struct as I can store multiple data types per entity and return this entity.
</td></tr>
<tr><td>☒</td><td>Having a blank entity, which can be used to reset the values of a selection</td></tr>
<tr><td>☒</td><td>Having two entities that represent what players 1 and 2 are putting into battle</td></tr>
</table>

Applying the effects of modifiers (attack bonuses, event cards, and technologies) as well as the quantity of units

☒	Modifying the values of player 1's selection and player 2's selection based on modifiers Approach works because two targets cannot attack one simultaneously

Calculating the outcome of different round of combat

☒	Calculating the outcome of an archer round of combat (ranged entities may attack and may retreat). The round is negated if fighting cavalry

☒	Calculating the outcome of the standard two rounds of combat (can retreat after 1 round)
☒	Calculating the outcome of a monk round of combat
☒	Calculating the outcome of a bombardment round of combat

Getting information about each player's "play state"

☒	**Reading info from .csv files:**
	• Each player's entities
	• The quantity of each player's entities
	• Each player's technologies
	• Whether these technologies are in play
	Not using std::cin for this as there's too much that would need to be entered and it inserts odd symbols for capitals and underscores
☒	**Validating the input**
	• Converting names to uppercase format. Seeing if the name entered matches one of the accepted names of entities (in uppercase).
	• Making sure the user fills out all the fields and that there's not too little or too much input
	• Making sure the names of entities put in are recognized
	• Making sure that there are no spaces as I'm using the spaces to split up the fields.
	• Making sure that the quantity of participating entities (except assisting monks) is > 0
	• And < 2 for buildings
	• And < 6 for all other entities
☒	Using the info from the .csv files to search for the corresponding thing and filling in the rest of the details so no user input is needed for that

Example

``
if(entityName == "Archer_(Saracen)") then{
     currentSelection = {"Archer_(Saracen)",1,entityQuantity,6,4,5,2,
     true,false,false,false,false,false,false,false,false,false
     ,false,false,false,false,false,false,false,false}; // One of the
     player's entered Archer_(Saracen)
}
``

V2.0

Developed by: Kory & Phillip

Focus: Converting it from a terminal application into a cross-platform GUI application

Goal:

- Making it easier for <u>users</u> to use through the addition of a GUI
- Making it faster for <u>users</u> to perform actions like entering players' battle-relevant information and calculating the results based on this by using hotkeys and UI elements
- Making it easier for <u>users</u> to run it.
    - Running the program via clicking an executable (.exe) file, not via typing **"./run"** in a Linux shell
- Making it easier for <u>users</u> to install / uninstall through software packaging
- Making it handle the last few event cards I haven't implemented (e.g., *"Back from a Foreign Land"*)
- Making it so <u>users</u> can run it on a range of devices with different operating systems
- Making it more customizable (e.g., being able to set player names)
- Making it prettier

Status: In development

Implemented	Feature
Adding essential functions	
☒	Exit button
☒	About button
☒	View user guide button
☒	View developer guide button
Getting information about the player's *"play state"*	
☒	Getting the entity (unit, building) names
☒	Getting the quantities of entities
☒	Getting the quantities of monks
☒	CheckedListBox in QT for events & technologies https://www.walletfox.com/course/qtcheckablelist.php
☒	Setting up the initial state of the UI elements with what's in the .csv files
Sending information about the player's *"play state"* **to the files so that the backend can read it.**	
☒	Converting entered entity names into names with underscores between it
☒	Sending what the user has entered to the .csv files
Getting user input	

☒	Supplying variables with answers the user provides. Was using std::cin for this. Would like to do this through the GUI now though.
Having hotkeys	
☒	Having a hotkey for the press of the calculate button
Displaying output	
☒	Writing std::cout statements to the GUI
☒	Making it so it clears the existing output when clicking the "Calculate results" button again. Don't want to see the same output twice or irrelevant output
☒	Making it so the output text is coloured, perhaps using HTML
Making it prettier	
☒	Adding colour to the UI elements • Having a light and dark mode
☒	Adding an application icon
☐	Having animations for entities (units and buildings) For units – idle, attack, death Idle – when selected Attack – when calculate results button is clicked Death – when "[name of unit] is dead" is outputted Destruction – when "[name of building] is dead" is outputted Reference for architecture: https://ageofempires.fandom.com/wiki/Architecture_set_(Age_of_Empires_II) (Partially done)
☐	Having icons for the technologies https://www.aoe2database.com/tech/115/-1/en
Making it easier to identify the players in the output window	
☒	Having an option for player name in playerDetails.csv
Making it usable on a range of devices of different screen sizes	
☒	Making it responsive
Playing sound effects from Age of Empires 2 (in moderation, don't want it to be obnoxious)	
https://docs.google.com/spreadsheets/d/1bczdFQksnbLnjI5zAkw-mSpb9MnnxxEkHDiz1PftIHw/edit#gid=123661276	

☒	Having AoE II sound effects for the UI
☒	Having AoE II sound effects for RNG elements • Successful "conversion attempt" • Successful "healing attempt"
☒	Having AoE II sound effects for significant events • Destruction of a wonder
☒	Having an option to enable and disable SFX

Covering what I haven't covered and should have covered in a v1.0 – v1.2 release

☒	Add this event card
	
	• **"Back From A Foreign Land":** "Use 1 Civilization bonus from target player for this turn. Bonus may not be used if it is a starting bonus **or requires civilization specific cards**. Play anytime.". **Really only 3 battle relevant bonuses to choose from in that case**
	
	  • **Byzantine bonuses to choose from:**
	
	    • Monk Healing Rate has a +2 modifier, thus making it easier to heal units
	
	    • All building get a HP bonus: Age I – 10 HP, Age II – 20 HP, Age III – 30 HP, Age IV – 40 HP
	
	  • **Teuton bonuses to choose from:**
	
	    • Conversion rate modifier is -1, thus making it harder to convert

☒	**Add this event card** • **"Holy War"**: "For the next 3 turns (not including your current turn) all of your units get +4 AP during this time.
☒	**Add this event card** • **"Black Knight"**: "Play this card when you are the attacking Cavalry unit. Two tokens on the defending unit have 0 AP for the first round of normal combat.

Making it easier to run and install

☐	Deploying it and packaging it with Inno Setup

Making it so.docx files are instead opened as PDF files within the application

https://doc.qt.io/qt-6/qtpdf-index.html

☒	Implementing a PDF viewer for the user guide, developer guide, and developer wishlist files

Making it easier to find what you're looking for

☒	Having an option to filter all the ticked events and technologies

☒	Having option to select your civilization Filters out entities that don't belong to one's civilization
☒	Setting up a filter for the entity names
☒	Making it easier to search for entity names • Being able to use aliases. For example, making it so "Temple of the Sun at Macchu Picchu (Incan)" can be found by searching for "Wonder (Incan)" Making it so the capitalization doesn't matter
☒	Making it so can't see entities from higher age than what one is at
☐	Making it so age and select civilization filters should be applying on top of each other

Making sure the user input is right

☒	**Validating the input:** Limiting what can be entered for the quantity of entities to 1 - 5
☒	**Validating the input:** Limiting what can be entered for the quantity of monks to 0 - 5
☒	Making it so user can't have multiple technologies activated. Like higher level technologies are often supposed to take the place of lower level technologies. For example, "Bracer" takes the place of both "Bodkin Arrow" and "Fletching" while "Bodkin Arrow" takes the place of "Fletching"

Making sure the user isn't bugged for input too often

☒	Having an option to automatically set whether a player is retreating or not
☒	Having an option to automatically set whether a player is converting or healing
☒	Making it so it doesn't ask if player will retreat if opposing entity has died
☒	Making it so it doesn't ask if player will retreat if building vs building battle

Making sure the rules are being followed

☒	Making it so archer round of combat only applies to buildings
☒	Making it so if archer retreats in a hit and run attack (vs non-cavalry), it doesn't show the first round of standard combat (Problem with standardRoundsCombat function. isRetreating is an empty string for some reason). Should check rules before making this change
☐	Check for correct following of ram rules

	// There is a rule that Archers and Villagers cannot attack Rams.
	
	// There is a rule that this unit can only attack buildings

☐	Is p2's 'assistant monk' targeting p1's assisting monk? Enter 1 for yes. Enter 0 for no Should only ask this question if p1 actually has a assisting monk Otherwise it should default to no
☐	Monks may not attach to any card that says "One token per card"
☐	Monks may not attach to building cards
☐	You may not target enemy monks for conversion unless a card effect states otherwise
☐	When combat damage is being assigned, the attacker may choose to kill off the defender's monks instead of military units. If a military unit loses its last token alive but still has monks attached, these monks keep the unit alive and in play.
Testing the QT version of the program on multiple platforms	
☐	Seeing if it works on Windows
☐	Seeing if it works on Linux
☐	Seeing if it works on MacOS

V3.0

Developed by: Kory & Phillip

Focus: Connecting a SQL database to a C++ program

Goal:

- Making it easier for <u>designers</u> to add, modify, view, and delete entity (unit, building) values

Implemented	Feature
Having data about the entities (units, buildings) stored in a SQL database instead of hard coded into the program	
☒	Create the tables (e.g., for the units, events, etc.)
☒	Fill the tables with data
Supply the program with this data instead of having it hardcoded in	
☒	Perhaps running a SQL query in C++ and storing the result of this as a variable
Having a developer window where it's possible to interact with this database	
☒	Modify the entries in a table
☒	View the entries in a table