MICHIGAN STATE UNIVERSITY Alpha Presentation BAPS 2: Battle Aircraft Position Share 2

The Capstone Experience

Team Boeing

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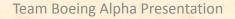
Fall 2011



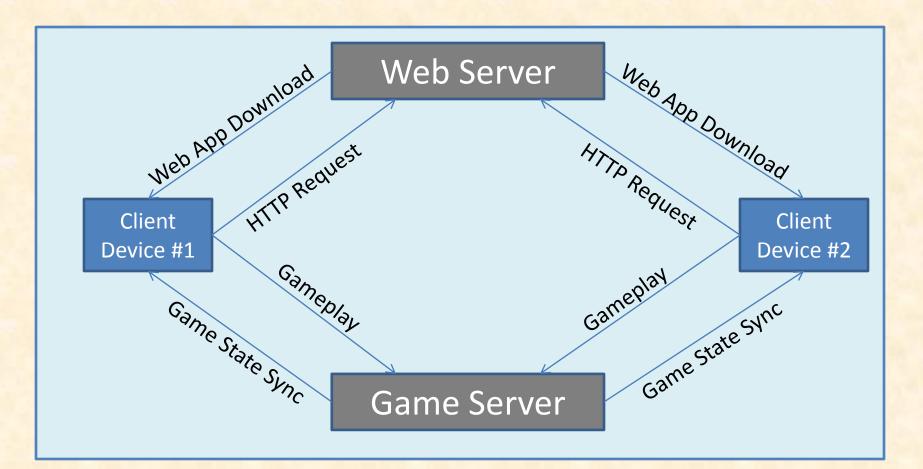
From Students... ...to Professionals

Project Overview

- Players compete in a 3D arena, seeking out and destroying opposing targets
- Players have the option of utilizing one of several cyber defense strategies
- Players must command an entire fleet consisting of planes and technology centers
- A player wins the game by destroying all opposing targets
- Played in a universal web app

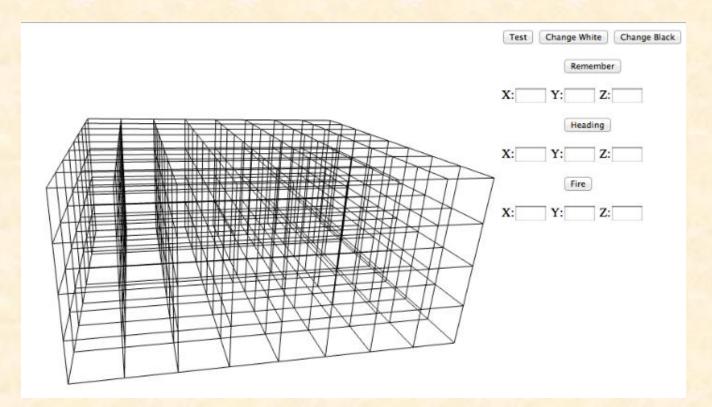


System Architecture

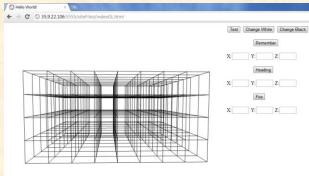


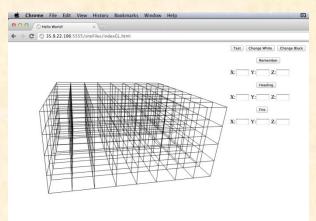


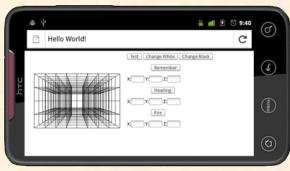
WebGL



Cross Platform







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Encryption

	% 5
File Edit Options Buffers Tools Help	
Generating Public/Private Keys:	<pre>**** n = 268326246365578889200515697863575325290670859696844433016303675417092115331150277 29823910912643699235711626575276057679119056037980328276741998553147751657143773748022865</pre>
Generating: p,q	26017784899816378254174334723952578379718111734268744115807276835496956259623713965656995 10091373643463082773933910941343708245222900500174940767389808529109036356251650348619782 780214427258322610356438615713830354114367638658996555562195766451465615044581475090549251
Generating: u	68902896829955139745076451066446774732908955148503208139941021127845120812326312490954383 88309103071354055897156964302208806172485167224272334650198562749050577732280360870253109 47
Generating: d 	**** p = 157227314746416664708650969539555823259289511817840586850977241154127221253343948
Done With Generation.	1105971960622443815943452163835504261852638082590836800934884296955665403123532727662930 841962641971281620837358488758440808480908375389062111179372657621626606878777676436640 25005175569140702303860799950665985424574557027301
Can encrypt? True Has Private? True Maximum string size: 255.0 	<pre>*** q = 170661342654326707771073399313169436804404872964125631406268155462792140360642657 585592386317050769585814386660878643340595694016231606127532966234718395458968234265985551 86444774354858209944755608007685925983211617403954428755844673893726587551213756263090672 66631652365580612571437313648763176798245448087847</pre>
ENCRYPTION DECRYPTION SESSION:	*** e = 65537
BEGIN RSA PRIVATE KEY MIIEpQIBAAKCAQEAII4QJB006675UX3y/ps5QaBjf610SU+/P3hszsgawUiHjQur OxdBwaKiv6eHBSkoWSLLBBEcA30eYJDx+J42dG3vwpD7qf70dv1u+B9Qv0+Dep jv+t7xpCoA2yK5GhD2eXX4CZIdiwDkP+eL57CYH0tRfSQwHRUc7whxDRrAxf29BS BB+xSVPyCU9AzPs6v6Rah0e/NVNh4vr1G25R0ZymLFsMIjCSy6/KiTnt4U/Q3/P3 GIER0M3PzgwFhP+Si2K479sx26hAORS8/GXValnf02YjMS14Urf3vXAkV0e7rz3 L3cZPbXu5442VNtc9WHz45z8Z4CU3LP2ZrEc4wIDAQABAoIBABEU00qX1C7UNnBX 4H1Y3GbrjUMgB8yC0BHh2auKYgyXcHImBKtdnbjL/LGd9VHtH300R6SZSXZznh0	<pre>*** d = 215604317158420194780035043555485857299033026712175226858698926521874220567593475 47988573609713859373370374833361874931449555075149062164170371603960520046160048912383601 39464677248338045361625643358154406224691328202774799962439708838629624748743225519596443 16972271176049650409316260283063913151249491742665055077952303060605978785534492916007266 4257299778142535422119443830775655734213654361633792029274357588218458650656335088912342 756706347966557617990271223187914409139781567445743786189011083015601170086452707071458694 37113818304945499329345685261783091651048579124388953564089338577877869966355757303703787 3</pre>
3g8ToY2PFaag+G0tKUCN8CyjHuwkkMLdJiCSZq5Šu7TEpPZhmE6ZUK54MNXFZZAf 4oisbQL8jVqfyWNdEb0zFZyku1RJnL1bD8hzXrsn8tuVPnLoK+A61znZh8koAtKz mzBgrTW1tL6UEZYrk6MnSV1xtnmU/7WmlC6FCkbezg2MMlETV0jqdUxhoIZN76 IFu/JA+dqzBq8MD6+r/CjpMTg33DpLzoUSSevNHfQV23cCTH6Kz0qexB8Ts1Vhsn zucwmTECgYEA3+YtRM6rfbcWs3BrTrzQdkxUUvKTdqbfEAceou0sfVIgZaguuq5W U+J3/wpz13DFKfu0A0P8Xtzyx56\143T88rj5tbct3L28BHmIsQ3ye3Jb2suHtg	<pre>*** u = 100097241347441446770996249154069905549912697683031552618804786734127555360859108 75278316978676917444455507514649549066837799111291041973372227057826233471395567550180916 62053067441480463223381416533058818577248339662668674232438988454638411116240528401720965 23867805251342542208886019312437874832062685187428</pre>
RuTvK6eA+/Z5g4p3NNVJdLEgihHJH8btJVarðipNzz1nUWFClo7te+UCgYEA8wei N+pWljtI6UEWy0MViKLScCoCRxCN/SH3+b3XJJg73e6vTqE26BLZz1CkURVcXZVW PanIexoz7gYZgzCsMlrvhV0yHPCFH80Bzdy8ci07pXP+E8KKTWgFbfjvPz53wd3z	String To Encrypt = This is a string.
FSMjXSeF12bx2rSiy5kB1E2d9/8YtqxBV1keScCgFEAlHcr82Fb0+kB2JFBbr7 FSMjXSeF12bx2rSiy5kB1E2d9/8YtqxBV1keScCgFEAlHcr82Fb0+kB2JFBbr7 fEVM8D27/MSgSx99eC01YCNSKjaAbfdmdR93RekQuabhqLgy2Q/QOTH9AhF3k/ 81L8zgFf3mdF6LmtY2cz+/14m+ALX/yEnCCUJWU2PSCqCJ0TYFDzaaV1r9St7 1P01Bb6Ng+tClFr67zzu6uUcgYEA7093B4Rz2t9p/nYfkevvCmr6uYREVeIRT0/h tUSg0+15LWMYk17fu3kjeakx03at37ayEc22WHrd1KUtyZjiGb01p0G1HURWn LyWR0enB3zy61sgFko95uT7FqAtFNdvugipb5mGebUPa22XgY1e8a2EXKxtBJLAe b3ee0UUcgYEAjosPXb/1rPqow/mS1PWE+BADPjW/g5GeruySC1CXa00H9Ey83+HV YKP1apH1ch3740UB0/1XxarmF1N09ygth/PTHKt6OX1u5bKsvtZmythBmpAUn00 oJo+h0ZUCMj/ahSBh6TNd4j5SgzZDAdPcQXsus/hZn1bZHfpwjItDWQ= END SA PRIVAT KEY	<pre>Encrypted Tuple = ('6\x93\x0b\xd2HgI \n\xbf\x84(\xc4\xb\xf7\xe4T2\xb6\x8d\xe4v49\xd1 =\x a2\xce\x1dAp\xd37g\xe7\xc8\xe1P\$\x00\xd1x\x13\xf8\xb1\xa9\xc2U"\x9d\x97\x97\xf9\x9c3\xc2 xa2\xfaL\xac\x60\xcCH\xa2;\xffAw.L\x81\x14\xbc(\x152W\x83f\x8d\xa2Vx64\x0c4X) xde\xd5R:(\xe3\x3a\xae\xac\xe4e^\x8f\xb1\xf1xb1\xc1\xac\xd1x12\xac\xd3\x19\xaexk\xc1e\x9f\x9d\xd0 xc8\x92\xd6\xcb\xc3\xcd\xab2U\x7f\x6\xac\x12\x12\x1xb2 xd6\xd5\xc1\xd7\x07\xdc\x1a+\xa7w\x93td\xf5\xaf\x8d\x1c\xa3\xa6\xa9\xc2 xd7\xd7\x07\xd7\x07\xdc\x1a+\xa7w\x93td\xf5\xaf\x8d\x1c\xa3\x40\xc0\x1f\x8d\x60\x1f\x8d\x60\x1f\x8d\xc2 f#\x87\x16\x47\x07\xdc\x1a+\xa7w\x93td\xf5\xaf\x8d\x1c\xa3\x40\x60\x1f\x99H\xf2\xeb\x27 4\xe7\x79F\x82\x9c\x60\x61\x61\x61\x8d\x71\x4d\x89\x17\x8d\x89\x16R\x9a\x71\x9f\\\0\xebf\x17\x 4\xe7\x71\x71\x8d\x62\x62\x1x61\x71\x8b\\x71\x8d\x71\x8d\x71\x71\x71\x71\x71\x71\x71\x71\x71\x71</pre>
BEGIN PUBLIC KEY	Decrypted String = This is a string.
MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEAII4qJ80b0675UX3y/ps5 QaBjf6105U+/P3hszsgawUiHjQurOxd8wokIv6e+89koM5LLB8EcA30efvJpx+J4 2dG3vwpD7d770dv1u+89Qv0+Degjv+75xpCad2xK66nb2eXXd2IdiwDkP+eLS7	END SESSION.
CYHQtRfSQwMRUc7whxDRrAxf29B5BB+xSVPyCU9AzPs6v6Rah0e/NVNh4Vr1G25R 0ZymLFsMIjCSy6/KiTnt4U/Q3/P3GIER0M3PzgwPhP+Si2tK479sxZ6hA0RSB/GX ValnfQZYjMS14Urf3vXAkV0e7rz3L3cZPbXuS442VNtc9WHz45z8Z4CU3LP2ZrEc 4WIDA0AB	
END PUBLIC KEY	
-UU-:F1 output.txt	

What's left to do?

Client UI

Game Logic

Game State Sync

