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CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
Haratt Address.	O constituents and a
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Exam #401 Page: 1 Name: ___

- Each exam is numbered (e.g. Exam #137).
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- The last page clearly says "End of Exam".
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- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

Exam	#401 Page: 2 Name:
. Please	perform the following number conversions.
a.	(2 pts) Convert 7cd2 from hexadecimal to binary
b.	(2 pts) Convert 0010 1001 1000 1101 from base 2 to hexadecimal
c.	(2 pts) Convert 0111 from binary to base 10
d.	(2 pts) Convert 138 from decimal to base 2
e.	(2 pts) Convert 110 000 110 from binary to base 8
f.	(2 pts) Convert 1000 0000 1101 0001 from binary to hexadecimal
g.	(2 pts) Convert d67f from base 16 to binary
h.	(2 pts) Convert 41 from base 8 to base 2
i.	(2 pts) Convert 70 from decimal to base 2

j. (2 pts) Convert 0001 from binary to decimal

	Exam #401 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing kiwi fig cherry
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[2][1]?
	c. (2 pts) What is the value of argv[1][0]?
	d. (2 pts) What is the value of argv[0][6]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  int b;
  char c;
  double d;
  Node e;
  int *f;
  char *g;
  double *h;
  Node *p;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) p->next
```

- b. (2 pts) argc
- c. (2 pts) argv[1][2]
- d. (2 pts) &c
- e. (2 pts) b
- f. (2 pts) f
- g. (2 pts) argv[0]
- h. (2 pts) p->data
- i. (2 pts) &p
- j. (2 pts) *p
- k. (2 pts) p->next->next

Exam #401 Page: 5 Name:	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #401 Page: 6 Name:

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #401 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #401 Page: 8 Name:	
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End of Exam

total points=100

Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	Α	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z			

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

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Exam #402 Page: 1 Name: _____

- Each exam is numbered (e.g. Exam #137).
- Each pages is numbered (e.g. Page 1, Page 2, etc.)
- The last page clearly says "End of Exam".
- This exam is closed book, closed notes, closed mouth, cell phone off
- You are permitted **one sheet of paper** (max size 8.5x11") on which to write notes
- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam	#402 Page: 2 Name:
1.	Please	perform the following number conversions.
	a.	(2 pts) Convert 174 from base 10 to binary
	b.	(2 pts) Convert fb12 from base 16 to base 2
	c.	(2 pts) Convert 0011 1101 1011 1010 from binary to base 16
	d.	(2 pts) Convert e72d from base 16 to base 2
	e.	(2 pts) Convert 0001 1001 from binary to base 10
	f.	(2 pts) Convert 1011 0011 from base 2 to base 10
	g.	(2 pts) Convert 110 110 001 from binary to base 8
	h.	(2 pts) Convert 73 from octal to base 2
	i.	(2 pts) Convert 1110 1000 from binary to base 10

j. (2 pts) Convert 45 from decimal to base 2

	Exam #402 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing fig mango
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[0][4]?
	c. (2 pts) What is the value of argv[1][0]?
	d. (2 pts) What is the value of argv[2][0]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  double b;
  char c;
  int d;
  Node e;
  double *f;
  char *g;
  int *h;
  Node *p;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) p->next->next
```

- b. (2 pts) argc
- c. (2 pts) p->data
- d. (2 pts) argv[1][2]
- e. (2 pts) &b
- f. (2 pts) &g
- g. (2 pts) *p
- h. (2 pts) argv[0]
- i. (2 pts) p->next
- j. (2 pts) p
- k. (2 pts) c

Exam #402 Page: 5 Name:	
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4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #402 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #402 Page: 8 Name:		

End of Exam

total points=100

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Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial	
Color in last initial:	Α	В	С	D	E	F	G	Н	ı	J	ĸ		М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z				

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Exam #403 Page: 1 Name: ____

- Each exam is numbered (e.g. Exam #137).
- Each pages is numbered (e.g. Page 1, Page 2, etc.)
- The last page clearly says "End of Exam".
- This exam is closed book, closed notes, closed mouth, cell phone off
- You are permitted **one sheet of paper** (max size 8.5x11") on which to write notes
- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam	#403 Page: 2 Name:
1.	Please	perform the following number conversions.
		(2 pts) Convert 1111 0011 0001 0011 from base 2 to base 16
	b.	(2 pts) Convert 1011 0101 0011 1011 from binary to hexadecimal
	c.	(2 pts) Convert 12 from octal to base 2
	d.	(2 pts) Convert 7317 from base 16 to binary
	e.	(2 pts) Convert fcdd from hexadecimal to base 2
	f.	(2 pts) Convert 010 011 010 from base 2 to base 8
	g.	(2 pts) Convert 829e from base 16 to binary
	h.	(2 pts) Convert 119 from decimal to base 2
	i.	(2 pts) Convert 178 from base 10 to binary

j. (2 pts) Convert 201 from base 10 to base 2

	Exam #403 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing lemon guava cherry apple
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[1][4]?
	c. (2 pts) What is the value of argv[0][4]?
	d. (2 pts) What is the value of argv[2][3]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  double y;
  int z;
  char a;
  Node b;
  double *c;
  int *d;
  char *e;
  Node *f;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) argc
```

- b. (2 pts) e
- c. (2 pts) f->next->next
- d. (2 pts) f->data
- e. (2 pts) b
- f. (2 pts) argv[1][2]
- g. (2 pts) f->next
- h. (2 pts) &f
- i. (2 pts) argv[0]
- j. (2 pts) &b
- k. (2 pts) *c

Exam #403 Page: 5 Name: _	
-	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #403 Page: 6 Name:	
Exam #403 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #40	3 Page:	7 Na	me:		

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #403 Page: 8 Name:	

End of Exam

total points=100

Color in first initial:	Α	В	С	D	Е	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Τ	U	٧	W	Х	Υ	Z	section (9.10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	Α	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z			

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

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Exam #404 Page: 1 Name: _____

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- Each pages is numbered (e.g. Page 1, Page 2, etc.)
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- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam #404 Page: 2 Name:
1.	Please perform the following number conversions.
	a. (2 pts) Convert 0100 1011 0111 0000 from base 2 to base 16
	b. (2 pts) Convert 5807 from hexadecimal to binary
	c. (2 pts) Convert 1101 0000 1111 1100 from binary to hexadecimal
	d. (2 pts) Convert 0010 1110 from binary to decimal
	e. (2 pts) Convert 33 from octal to binary
	f. (2 pts) Convert 78 from decimal to binary
	g. (2 pts) Convert d451 from hexadecimal to base 2
	h. (2 pts) Convert 7 from octal to base 2
	i. (2 pts) Convert 164 from base 10 to binary

j. (2 pts) Convert 1101 0101 from binary to decimal

	Exam #404 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing apple banana kiwi guava
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[2][2]?
	c. (2 pts) What is the value of argv[0][4]?
	d. (2 pts) What is the value of argv[1][0]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  double p;
  int q;
  char r;
  Node s;
  double *t;
  int *w;
  char *x;
  Node *y;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) y->next->next
```

- b. (2 pts) argc
- c. (2 pts) *y
- d. (2 pts) &x
- e. (2 pts) y->data
- f. (2 pts) argv[1][2]
- g. (2 pts) y->next
- h. (2 pts) &s
- i. (2 pts) w
- j. (2 pts) argv[0]
- k. (2 pts) s

Exam #404 Page: 5 Name: _	
-	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #404 I age. 0 I taine.	Exam #404 Page: 6 Name: _	
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5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #404 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result

cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #404 Page: 8 Name:	

End of Exam

total points=100

Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Τ	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	А	В	С	D	Ε	F	G	Н	Ι	J	K	L	M	N	0	Р	Q	R	S	Τ	U	٧	W	Х	Υ	Z			

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Name:	
Haratt Address.	O constituents and a
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Exam #405 Page: 1 Name: _____

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- Each pages is numbered (e.g. Page 1, Page 2, etc.)
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- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam	#405 Page: 2 Name:
1.		perform the following number conversions.
		(2 pts) Convert 1001 0000 from base 2 to base 10
		(2 pts) Convert 4 from octal to base 2
		(2 pts) Convert 1011 1110 1101 1101 from binary to hexadecimal
		(2 pts) Convert 50 1 from horseles involves 2
		(2 pts) Convert 50a1 from hexadecimal to base 2 (2 pts) Convert 1110 1000 from binary to decimal
		(2 pts) Convert 741 from base 16 to base 2
		(2 pts) Convert 51 from octal to binary
		(2 pts) Convert 0110 1111 from binary to base 10
	-	

j. (2 pts) Convert 0111 0001 from base 2 to base 10

	Exam #405 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing kiwi grape fig
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[2][2]?
	c. (2 pts) What is the value of argv[1][1]?
	d. (2 pts) What is the value of argv[0][0]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  char f;
  int g;
  double h;
  Node p;
  char *q;
  int *r;
  double *s;
  Node *t;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) argv[1][2]
```

b. (2 pts) &h

c. (2 pts) *r

d. (2 pts) t->data

e. (2 pts) q

f. (2 pts) t->next->next

g. (2 pts) argc

h. (2 pts) argv[0]

i. (2 pts) g

j. (2 pts) t->next

k. (2 pts) &q

Exam #405 Page: 5 Name:	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #405 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #405 Page: 7 Name: j	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #405 Page: 8 Name:	
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End of Exam

total points=100

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Color in first initial:	Α	В	С	D	Ε	F	G	Н	I	J	K	L	M	N	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	Α	В	С	D	Е	F	G	Н	I	J	K	L	M	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z			

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
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Exam #406 Page: 1 Name: _____

- Each exam is numbered (e.g. Exam #137).
- Each pages is numbered (e.g. Page 1, Page 2, etc.)
- The last page clearly says "End of Exam".
- This exam is closed book, closed notes, closed mouth, cell phone off
- You are permitted **one sheet of paper** (max size 8.5x11") on which to write notes
- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	LXaIII	#400 Page: 2 Name:
1.		perform the following number conversions. (2 pts) Convert 60 from octal to binary
	b.	(2 pts) Convert 70 from base 8 to base 2
	c.	(2 pts) Convert 1111 0101 from binary to base 10
	d.	(2 pts) Convert 22 from decimal to binary
	e.	(2 pts) Convert 166 from decimal to base 2
	f.	(2 pts) Convert 1aae from base 16 to base 2
	g.	(2 pts) Convert 8070 from hexadecimal to base 2
	h.	(2 pts) Convert 3 from base 8 to base 2
	i.	(2 pts) Convert 10cc from base 16 to binary

j. (2 pts) Convert 1001 1101 from base 2 to decimal

	Exam #406 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing mango cherry
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[1][2]?
	c. (2 pts) What is the value of argv[2][0]?
	d. (2 pts) What is the value of argv[0][3]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  char y;
  double z;
  int a;
  Node b;
  char *c;
  double *d;
  int *e;
  Node *f;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) a
```

b. (2 pts) f->next

c. (2 pts) f->data

d. (2 pts) f->next->next

e. (2 pts) &d

f. (2 pts) argv[0]

g. (2 pts) argv[1][2]

h. (2 pts) f

i. (2 pts) &y

j. (2 pts) argc

k. (2 pts) *d

Exam #406 Page: 5 Name: _	
_	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #406 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #406 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #406 Page: 8 Name:	
G	

End of Exam

total points=100

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Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	laşt name initial	
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CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
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Exam #407 Page: 1 Name: ____

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- Each pages is numbered (e.g. Page 1, Page 2, etc.)
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- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam #40/ Page: 2 Name:
	-
l.	Please perform the following number conversions.
	a. (2 pts) Convert 6 from decimal to binary
	b. (2 pts) Convert 157 from decimal to binary
	c. (2 pts) Convert 70 from base 8 to binary
	d. (2 pts) Convert 101 000 101 from binary to base 8
	e. (2 pts) Convert 8a0b from hexadecimal to binary
	f. (2 pts) Convert b48b from base 16 to base 2
	g. (2 pts) Convert 2a60 from base 16 to base 2
	h. (2 pts) Convert 149 from decimal to base 2
	i. (2 pts) Convert 1101 1010 from binary to base 10

j. (2 pts) Convert 0011 1001 from base 2 to decimal

	Exam #407 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing kiwi banana
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[0][1]?
	c. (2 pts) What is the value of argv[1][0]?
	d. (2 pts) What is the value of argv[2][5]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  char s;
  double t;
  int w;
  Node x;
  char *y;
  double *z;
  int *a;
  Node *b;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) s
```

b. (2 pts) argv[0]

c. (2 pts) a

d. (2 pts) *a

e. (2 pts) b->next

f. (2 pts) &x

g. (2 pts) b->data

h. (2 pts) argc

i. (2 pts) &b

j. (2 pts) b->next->next

k. (2 pts) argv[1][2]

Exam #407 Page: 5 Name:	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #407 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result

cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

End of Exam

total points=100

Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	Α	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z			

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
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Exam #408 Page: 1 Name: _____

- Each exam is numbered (e.g. Exam #137).
- Each pages is numbered (e.g. Page 1, Page 2, etc.)
- The last page clearly says "End of Exam".
- This exam is closed book, closed notes, closed mouth, cell phone off
- You are permitted one sheet of paper (max size 8.5x11") on which to write notes
- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam	#408 Page: 2 Name:
1.	Please	perform the following number conversions.
	a.	(2 pts) Convert 94 from decimal to binary
	b.	(2 pts) Convert 010 000 001 from binary to octal
	c.	(2 pts) Convert 100 010 000 from binary to base 8
	d.	(2 pts) Convert 0101 1110 0101 0011 from binary to base 16
	e.	(2 pts) Convert 250 from decimal to base 2
	f.	(2 pts) Convert 101 101 011 from base 2 to base 8
	g.	(2 pts) Convert 011 111 000 from binary to octal
	h.	(2 pts) Convert 17 from octal to binary
	i.	(2 pts) Convert 205 from base 10 to binary

j. (2 pts) Convert 010 001 001 from base 2 to base 8

	Exam #408 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing banana apple guava kiwi
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[2][2]?
	c. (2 pts) What is the value of argv[0][0]?
	d. (2 pts) What is the value of argv[1][0]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  int f;
  double g;
  char h;
  Node p;
  int *q;
  double *r;
  char *s;
  Node *t;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) &s
```

b. (2 pts) t->next->next

c. (2 pts) t->data

d. (2 pts) argv[0]

e. (2 pts) argv[1][2]

f. (2 pts) t->next

g. (2 pts) f

h. (2 pts) *r

i. (2 pts) argc

j. (2 pts) r

k. (2 pts) &p

Exam #408 Page: 5 Name: _	
-	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #408 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #408 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #408 Page: 8 Name:	
_	

End of Exam

total points=100

Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Τ	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	A	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	X	Y	Z			

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
Haratt Adduses	O constituents and a
Umail Address:	@ umail.ucsb.edu

- Please write your name above AND AT THE TOP OF EVERY PAGE
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Exam #409 Page: 1 Name: _____

- Each exam is numbered (e.g. Exam #137).
- Each pages is numbered (e.g. Page 1, Page 2, etc.)
- The last page clearly says "End of Exam".
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- You are permitted **one sheet of paper** (max size 8.5x11") on which to write notes
- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam #409 Page: 2 Name:
1.	Please perform the following number conversions.
	a. (2 pts) Convert 50 from octal to base 2
	b. (2 pts) Convert 1111 1010 from binary to base 10
	c. (2 pts) Convert 35 from base 8 to base 2
	d. (2 pts) Convert 1110 1010 0011 1101 from binary to hexadecimal
	e. (2 pts) Convert 1101 1101 1100 1111 from binary to hexadecimal
	f. (2 pts) Convert 23 from octal to binary
	g. (2 pts) Convert 001 001 100 from base 2 to octal
	h. (2 pts) Convert 60 from octal to binary
	i. (2 pts) Convert 100 101 110 from binary to base 8

j. (2 pts) Convert 111 000 001 from binary to base 8

	Exam #409 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing grape mango date
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[0][1]?
	c. (2 pts) What is the value of argv[2][2]?
	d. (2 pts) What is the value of argv[1][3]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  int b;
  char c;
  double d;
  Node e;
  int *f;
  char *g;
  double *h;
  Node *p;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) argv[0]
```

c. (2 pts) p->next

d. (2 pts) argv[1][2]

e. (2 pts) &d

f. (2 pts) d

g. (2 pts) p->next->next

h. (2 pts) p

i. (2 pts) p->data

j. (2 pts) &f

k. (2 pts) argc

Exam #409 Page: 5 Name: _	
_	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #409 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #409 l	Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #409 Page: 8 Name:	
_	

End of Exam

total points=100

Color in first initial:	Α	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
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CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
Haratt Adduses	O constituents and a
Umail Address:	@ umail.ucsb.edu

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Exam #410 Page: 1 Name: _____

- Each exam is numbered (e.g. Exam #137).
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- Please write your name on your notes sheet

\mathbf{E}	xam	#410 Page: 2 Name:
 Di	lagga	nowform the following number conversions
I. P		perform the following number conversions. (2 pts) Convert d52e from base 16 to binary
	b.	(2 pts) Convert 110 011 000 from base 2 to octal
	c.	(2 pts) Convert 172 from base 10 to binary
	d.	(2 pts) Convert 21 from octal to binary
	e.	(2 pts) Convert 14 from octal to binary
	f.	(2 pts) Convert 130 from decimal to binary
	g.	(2 pts) Convert 001 010 000 from binary to octal
	h.	(2 pts) Convert 44 from base 10 to binary
	i.	(2 pts) Convert 57 from base 10 to binary

j. (2 pts) Convert 1101 from binary to base 10

	Exam #410 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing date fig
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[1][2]?
	c. (2 pts) What is the value of argv[2][0]?
	d. (2 pts) What is the value of argv[0][4]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  double s;
  char t;
  int w;
  Node x;
  double *y;
  char *z;
  int *a;
  Node *b;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) b->next
```

b. (2 pts) b->next->next

c. (2 pts) &t

d. (2 pts) b->data

e. (2 pts) argc

f. (2 pts) *a

g. (2 pts) b

h. (2 pts) &a

i. (2 pts) argv[1][2]

j. (2 pts) x

k. (2 pts) argv[0]

Exam #410 Page: 5 Name:	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #410 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #410 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #410 Page: 8 Name:	

End of Exam

total points=100

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CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

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i. (2 pts) Convert 0011 from binary to base 10

j. (2 pts) Convert 101 010 001 from binary to base 8

	Exam #411 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing grape banana
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[0][5]?
	c. (2 pts) What is the value of argv[1][4]?
	d. (2 pts) What is the value of argv[2][2]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  char p;
  double q;
  int r;
  Node s;
  char *t;
  double *w;
  int *x;
  Node *y;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) &t
```

d. (2 pts) argv[1][2]

```
e. (2 pts) y->next
```

f. (2 pts) *t

g. (2 pts) argc

h. (2 pts) r

i. (2 pts) argv[0]

j. (2 pts) y->next->next

k. (2 pts) y->data

Exam #411 Page: 5 Name: _	
-	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #411 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #411 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #411 Page: 8 Name:	
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End of Exam

total points=100

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CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

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Exam #412 Page: 1 Name: ____

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i. (2 pts) Convert 1111 0101 from base 2 to decimal

j. (2 pts) Convert 55 from octal to binary

	Exam #412 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing guava lemon kiwi lime
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[0][1]?
	c. (2 pts) What is the value of argv[2][0]?
	d. (2 pts) What is the value of argv[1][3]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  double b;
  int c;
  char d;
  Node e;
  double *f;
  int *g;
  char *h;
  Node *p;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) *p
```

b. (2 pts) p->next->next

c. (2 pts) p->data

d. (2 pts) f

e. (2 pts) argv[0]

f. (2 pts) &b

g. (2 pts) c

h. (2 pts) argv[1][2]

i. (2 pts) p->next

j. (2 pts) argc

k. (2 pts) &p

Exam #412 Page: 5 Name: _	
-	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #412 Page: 6 Name:	
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5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #412 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result

cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #412 Page: 8 Name:	
_	

End of Exam

total points=100

Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9.10,11, 12,1,2)	first name initial	last name initial
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CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

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	Exam #413 Page: 2 Name:
1.	Please perform the following number conversions.
	a. (2 pts) Convert 183 from decimal to binary
	b. (2 pts) Convert 227 from decimal to base 2c. (2 pts) Convert 0010 1101 from binary to decimal
	d. (2 pts) Convert 25 from base 10 to binary
	e. (2 pts) Convert 0110 1010 1111 1100 from binary to hexadecimal
	f. (2 pts) Convert 183 from decimal to base 2
	g. (2 pts) Convert 205 from base 10 to binary
	h. (2 pts) Convert 226 from base 10 to binary
	i. (2 pts) Convert 191 from decimal to base 2

j. (2 pts) Convert 24 from base 8 to binary

	Exam #413 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing date fig lemon
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[1][1]?
	c. (2 pts) What is the value of argv[2][2]?
	d. (2 pts) What is the value of argv[0][0]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  int y;
  char z;
  double a;
  Node b;
  int *c;
  char *d;
  double *e;
  Node *f;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) *d
```

- b. (2 pts) f
- c. (2 pts) f->next
- d. (2 pts) f->data
- e. (2 pts) f->next->next
- f. (2 pts) argv[0]
- g. (2 pts) &b
- h. (2 pts) &d
- i. (2 pts) b
- j. (2 pts) argc
- k. (2 pts) argv[1][2]

Exam #413 Page: 5 Name: _	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #413 Page: 6 Name:	
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5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #413 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #413 Page: 8 Name:	

End of Exam

total points=100

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Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial	
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	Exam #414 Page: 2 Name:
1.	Please perform the following number conversions.
	a. (2 pts) Convert 1110 1000 from base 2 to base 10
	b. (2 pts) Convert 1011 0100 1111 1100 from base 2 to hexadecimal
	c. (2 pts) Convert 31 from octal to base 2
	d. (2 pts) Convert 7627 from hexadecimal to base 2
	e. (2 pts) Convert 60 from octal to binary
	f. (2 pts) Convert 72 from octal to binary
	g. (2 pts) Convert 110 011 111 from binary to base 8
	h. (2 pts) Convert 75 from decimal to binary
	i. (2 pts) Convert 0110 0001 from base 2 to decimal

j. (2 pts) Convert 011 111 001 from base 2 to octal

	Exam #414 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing cherry apple
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[1][0]?
	c. (2 pts) What is the value of argv[0][6]?
	d. (2 pts) What is the value of argv[2][2]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  double y;
  char z;
  int a;
  Node b;
  double *c;
  char *d;
  int *e;
  Node *f;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) argc
```

b. (2 pts) &f

c. (2 pts) *c

d. (2 pts) e

e. (2 pts) f->next->next

f. (2 pts) argv[1][2]

g. (2 pts) y

h. (2 pts) argv[0]

i. (2 pts) f->data

j. (2 pts) &z

k. (2 pts) f->next

Exam #414 Page: 5 Name:	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #414 Page: 6 Name:	
-------------------------	--

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #414 Page: 7 Name: j	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #414 Page: 8 Name:	

End of Exam

total points=100

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CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
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Umail Address:	@ umail.ucsb.edu

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Exam #415 Page: 1 Name: ____

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- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam #415 Page: 2 Name:
. •	Please perform the following number conversions.
	a. (2 pts) Convert 2d8b from base 16 to binary
	b. (2 pts) Convert 33 from base 8 to base 2
	c. (2 pts) Convert 521f from hexadecimal to base 2
	d. (2 pts) Convert 211 from base 16 to binary
	e. (2 pts) Convert 1010 0100 from binary to base 10
	f. (2 pts) Convert 1000 0011 0111 0010 from base 2 to hexadecima
	g. (2 pts) Convert 011 110 011 from base 2 to base 8
	h. (2 pts) Convert 1101 0011 0110 0000 from base 2 to hexadecima
	i. (2 pts) Convert 43 from decimal to base 2

j. (2 pts) Convert 110 001 from base 2 to octal

	Exam #415 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing kiwi cherry
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[1][1]?
	c. (2 pts) What is the value of argv[0][3]?
	d. (2 pts) What is the value of argv[2][1]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  double e;
  char f;
  int g;
  Node h;
  double *p;
  char *q;
  int *r;
  Node *s;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) s->data
```

- b. (2 pts) &q
- c. (2 pts) argv[0]
- d. (2 pts) argc
- e. (2 pts) s->next
- f. (2 pts) q
- g. (2 pts) argv[1][2]
- h. (2 pts) &e
- i. (2 pts) s->next->next
- j. (2 pts) *r
- k. (2 pts) h

Exam #415 Page: 5 Name: _	
8 –	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #415 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #415 Page: 8 Name:	

End of Exam

total points=100

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Color in first initial:	Α	В	С	D	Ε	F	G	Н	Ι	J	K	L	М	N	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
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CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

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- Please write your name on your notes sheet

	Exam #410 Page: 2 Name:
1.	Please perform the following number conversions.
	a. (2 pts) Convert 0010 0001 1101 0001 from binary to hexadecimal
	b. (2 pts) Convert 0101 0111 from base 2 to base 10
	c. (2 pts) Convert 1011 0011 from base 2 to base 10
	\ 1 /
	d. (2 pts) Convert 58 from decimal to binary
	e. (2 pts) Convert 0111 1110 from base 2 to decimal
	f. (2 pts) Convert 110 000 000 from base 2 to octal
	g. (2 pts) Convert 2 from octal to base 2
	1 (2 ·) C · · · · · · · · · · · · · · · · ·
	h. (2 pts) Convert 0110 1111 from base 2 to base 10
	i. (2 pts) Convert 0110 0000 1111 0100 from binary to hexadecimal

j. (2 pts) Convert 1010 0001 from binary to base 10

	Exam #416 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing banana lime guava kiwi
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[1][5]?
	c. (2 pts) What is the value of argv[2][3]?
	d. (2 pts) What is the value of argv[0][0]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  int a;
  double b;
  char c;
  Node d;
  int *e;
  double *f;
  char *g;
  Node *h;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) h->next
```

- b. (2 pts) d
- c. (2 pts) argv[0]
- d. (2 pts) &f
- e. (2 pts) &a
- f. (2 pts) argv[1][2]
- g. (2 pts) h->next->next
- h. (2 pts) argc
- i. (2 pts) f
- j. (2 pts) h->data
- k. (2 pts) *f

Exam #416 Page: 5 Name: _	
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4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #416 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result

cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #416 Page: 8 Name:	
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End of Exam

total points=100

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Color in first initial:	Α	В	С	D	Ε	F	G	Н	I	J	K	L	M	N	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	А	В	С	D	Е	F	G	Н	I	J	K	L	M	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z			

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

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- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

1.	Please	perform the following number conversions.
	a.	(2 pts) Convert 0110 0110 from binary to base 10
	b.	(2 pts) Convert 0001 0001 0011 0010 from binary to hexadecimal
	c.	(2 pts) Convert 50 from base 8 to base 2
	d.	(2 pts) Convert 198 from decimal to base 2
	e.	(2 pts) Convert 30 from base 8 to binary
	f.	(2 pts) Convert 26 from base 8 to binary
	g.	(2 pts) Convert 54 from base 8 to base 2
	h.	(2 pts) Convert 247 from base 10 to base 2
	i.	(2 pts) Convert 12 from base 8 to base 2

j. (2 pts) Convert 0011 1101 from base 2 to base 10

Exam #417 Page: 2 Name: _____

	Exam #417 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing date kiwi banana
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[2][3]?
	c. (2 pts) What is the value of argv[1][1]?
	d. (2 pts) What is the value of argv[0][2]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  int x;
  char y;
  double z;
  Node a;
  int *b;
  char *c;
  double *d;
  Node *e;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) argv[0]
```

b. (2 pts) &e

c. (2 pts) *d

d. (2 pts) e->next->next

e. (2 pts) argv[1][2]

f. (2 pts) argc

g. (2 pts) e->data

h. (2 pts) &a

i. (2 pts) y

j. (2 pts) b

k. (2 pts) e->next

Exam #417 Page: 5 Name: _	
-	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #417 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result

cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #417 Page: 8 Name:	

End of Exam

total points=100

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Color in first initial:	Α	В	С	D	Ε	F	G	Н	I	J	K	L	M	N	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
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- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

Please p	erform the following number conversions.
a. (2	2 pts) Convert 46 from base 8 to base 2
b. (2	2 pts) Convert e2b8 from hexadecimal to base 2
c. (2	2 pts) Convert 215 from base 10 to binary
d. (2	2 pts) Convert 2316 from hexadecimal to binary
e. (2	2 pts) Convert 1011 0111 1011 0011 from base 2 to base 16
f. (2	2 pts) Convert 140 from decimal to base 2
g. (2	2 pts) Convert b5cb from hexadecimal to base 2
h. (2	2 pts) Convert 0110 0000 0111 1100 from binary to base 16
i. (2	2 pts) Convert 63 from base 8 to binary
j. (2	2 pts) Convert 0110 1001 from base 2 to base 10

Exam #418 Page: 2 Name: _____

1

	Exam #418 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing grape mango
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[1][1]?
	c. (2 pts) What is the value of argv[0][4]?
	d. (2 pts) What is the value of argv[2][0]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  double y;
  char z;
  int a;
  Node b;
  double *c;
  char *d;
  int *e;
  Node *f;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) &a
```

- b. (2 pts) b
- c. (2 pts) f
- d. (2 pts) &d
- e. (2 pts) argc
- f. (2 pts) argv[0]
- g. (2 pts) argv[1][2]
- h. (2 pts) f->next->next
- i. (2 pts) *e
- j. (2 pts) f->next
- k. (2 pts) f->data

Exam #418 Page: 5 Name: _	
-	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #418 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #418 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;
#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #418 Page: 8 Name:	

End of Exam

total points=100

Color in first initial:	Α	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
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- The last page clearly says "End of Exam".
- This exam is closed book, closed notes, closed mouth, cell phone off
- You are permitted **one sheet of paper** (max size 8.5x11") on which to write notes
- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	cxam	#419 Page: 2 Name:
1.	Please	perform the following number conversions.
	a.	(2 pts) Convert 220 from base 10 to binary
	b.	(2 pts) Convert 100 111 001 from base 2 to octal
	c.	(2 pts) Convert 110 001 011 from binary to octal
	d.	(2 pts) Convert af00 from hexadecimal to base 2
	e.	(2 pts) Convert 46 from base 8 to base 2
	f.	(2 pts) Convert 0010 0110 from binary to base 10
	g.	(2 pts) Convert 27 from base 8 to base 2
	h.	(2 pts) Convert 1110 1000 0010 1101 from base 2 to base 16
	i.	(2 pts) Convert 45 from octal to base 2

j. (2 pts) Convert 0101 from base 2 to base 10

	Exam #419 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing guava lemon banana kiwi
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[0][6]?
	c. (2 pts) What is the value of argv[1][4]?
	d. (2 pts) What is the value of argv[2][4]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  double d;
  int e;
  char f;
  Node g;
  double *h;
  int *p;
  char *q;
  Node *r;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) argv[1][2]
```

- b. (2 pts) e
- c. (2 pts) argv[0]
- d. (2 pts) r->data
- e. (2 pts) argc
- f. (2 pts) *r
- g. (2 pts) &e
- h. (2 pts) r->next->next
- i. (2 pts) &r
- j. (2 pts) r->next
- k. (2 pts) q

Exam #419 Page: 5 Name:	
	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #419 Page: 6 Name:	
-------------------------	--

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #419 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result

cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #419 Page: 8 Name:	

End of Exam

total points=100

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Color in first initial:	A	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	А	В	С	D	Е	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Τ	U	٧	W	Х	Υ	Z			

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
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Exam #420 Page: 1 Name: _____

- Each exam is numbered (e.g. Exam #137).
- Each pages is numbered (e.g. Page 1, Page 2, etc.)
- The last page clearly says "End of Exam".
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- You are permitted **one sheet of paper** (max size 8.5x11") on which to write notes
- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam	#420 Page: 2 Name:
1.	Please	perform the following number conversions.
	a.	(2 pts) Convert 53 from base 10 to binary
	b.	(2 pts) Convert 17 from base 8 to binary
	c.	(2 pts) Convert 0110 1011 from base 2 to base 10
	d.	(2 pts) Convert 0110 1010 from binary to base 10
	e.	(2 pts) Convert 1011 0111 0111 from base 2 to hexadecimal
	f.	(2 pts) Convert 27d3 from base 16 to binary
	g.	(2 pts) Convert 101 100 010 from binary to octal
	h.	(2 pts) Convert 1000 1110 from base 2 to base 10
	i.	(2 pts) Convert 8950 from hexadecimal to binary

j. (2 pts) Convert 100 010 from base 2 to octal

	Exam #420 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing grape mango cherry fig
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[2][0]?
	c. (2 pts) What is the value of argv[0][6]?
	d. (2 pts) What is the value of argv[1][2]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  double w;
  int x;
  char y;
  Node z;
  double *a;
  int *b;
  char *c;
  Node *d;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) d->next
```

- b. (2 pts) &x
- c. (2 pts) d->next->next
- d. (2 pts) d->data
- e. (2 pts) argv[1][2]
- f. (2 pts) a
- g. (2 pts) &c
- h. (2 pts) w
- i. (2 pts) argc
- j. (2 pts) *d
- k. (2 pts) argv[0]

Exam #420 Page: 5 Name: _	
-	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #420 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #420 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #420 Page: 8 Name:	

End of Exam

total points=100

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CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

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Exam #421 Page: 1 Name: ___

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- Please write your name on your notes sheet

	Exam #421 Page: 2 Name:
1.	Please perform the following number conversions. a. (2 pts) Convert 0111 1010 0010 1101 from base 2 to hexadecimal
	b. (2 pts) Convert 76 from base 8 to base 2
	c. (2 pts) Convert 88 from decimal to binary
	d. (2 pts) Convert 75 from octal to binary
	e. (2 pts) Convert 73 from base 8 to base 2
	f. (2 pts) Convert 193 from base 10 to binary
	g. (2 pts) Convert 010 110 110 from base 2 to octal
	h. (2 pts) Convert 0001 0110 0100 1111 from base 2 to base 16
	i. (2 pts) Convert 0101 0011 0110 0111 from base 2 to base 16

j. (2 pts) Convert 101 011 010 from binary to octal

	Exam #421 Page: 3 Name:											
2.	Assume the main function in the program thing.cpp starts with:											
	<pre>int main(int argc, char *argv[]) {</pre>											
	Further, suppose this program is invoked with the following command line:											
	./thing lemon guava fig											
	a. (2 pts) What is the value of argc in this case?											
	b. (2 pts) What is the value of argv[2][2]?											
	c. (2 pts) What is the value of argv[1][3]?											
	d. (2 pts) What is the value of argv[0][6]?											

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  char r;
  int s;
  double t;
  Node w;
  char *x;
  int *y;
  double *z;
  Node *a;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) *x
```

b. (2 pts) t

c. (2 pts) argv[1][2]

d. (2 pts) argv[0]

e. (2 pts) a->data

f. (2 pts) &r

g. (2 pts) a

h. (2 pts) a->next

i. (2 pts) argc

j. (2 pts) &x

k. (2 pts) a->next->next

Exam #421 Page: 5 Name: _	
-	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #421 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #421 Page: 7 Name: j	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result

cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #421 Page: 8 Name:	
_	

End of Exam

total points=100

Color in first initial:	Α	В	С	D	Ε	F	G	Н	I	J	K	L	M	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	Α	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z			

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
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Umail Address:	@ umail.ucsb.edu

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Exam #422 Page: 1 Name: _____

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- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam	#422 Page: 2 Name:
1.		perform the following number conversions.
	a.	(2 pts) Convert ab8f from hexadecimal to base 2
	b.	(2 pts) Convert 1100 1011 from binary to base 10
	c.	(2 pts) Convert 43 from octal to base 2
	d.	(2 pts) Convert 010 100 101 from binary to base 8
	e.	(2 pts) Convert 010 001 001 from base 2 to base 8
	f.	(2 pts) Convert 1111 0100 0001 1001 from binary to base 16
	g.	(2 pts) Convert 27 from octal to binary
	h.	(2 pts) Convert 0111 1111 0011 1110 from binary to base 16
	i.	(2 pts) Convert 1111 0101 0010 0010 from binary to hexadecimal

j. (2 pts) Convert 1101 1001 from binary to base 10

	Exam #422 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing lemon mango
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[1][2]?
	c. (2 pts) What is the value of argv[0][0]?
	d. (2 pts) What is the value of argv[2][1]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  char s;
  double t;
  int w;
  Node x;
  char *y;
  double *z;
  int *a;
  Node *b;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) b->data
```

- b. (2 pts) &z
- c. (2 pts) argv[0]
- d. (2 pts) argc
- e. (2 pts) &x
- f. (2 pts) b->next->next
- g. (2 pts) *y
- h. (2 pts) argv[1][2]
- i. (2 pts) b->next
- j. (2 pts) b
- k. (2 pts) s

Exam #422 Page: 5 Name: _	
_	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #422 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #422 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #422 Page: 8 Name:	

End of Exam

total points=100

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Color in first initial:	Α	В	С	D	Е	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	s	Т	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial	
Color in last initial:	Α	В	С	D	Е	F	G	Н	l	J	K	L	М	N	0	Р	Q	R	s	Т	U	٧	W	Х	Υ	Z				

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
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Exam #423 Page: 1 Name: ____

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- You are permitted **one sheet of paper** (max size 8.5x11") on which to write notes
- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam	#423 Page: 2 Name:
1.	Please	perform the following number conversions.
	a.	(2 pts) Convert 74 from base 8 to base 2
	b.	(2 pts) Convert 133 from decimal to base 2
	c.	(2 pts) Convert 7d2e from base 16 to base 2
	d.	(2 pts) Convert 1101 1110 from binary to decimal
	e.	(2 pts) Convert 40 from base 10 to binary
	f.	(2 pts) Convert 8df6 from hexadecimal to base 2
	g.	(2 pts) Convert 001 110 from base 2 to octal
	h.	(2 pts) Convert 1 from octal to base 2
	i.	(2 pts) Convert 57 from base 8 to base 2

j. (2 pts) Convert 011 101 010 from binary to octal

	Exam #423 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing date grape apple kiwi
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[0][4]?
	c. (2 pts) What is the value of argv[2][0]?
	d. (2 pts) What is the value of argv[1][0]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  double p;
  int q;
  char r;
  Node s;
  double *t;
  int *w;
  char *x;
  Node *y;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) argc
```

- b. (2 pts) y->data
- c. (2 pts) argv[1][2]
- d. (2 pts) *w
- e. (2 pts) r
- f. (2 pts) y->next
- g. (2 pts) x
- h. (2 pts) y->next->next
- i. (2 pts) argv[0]
- j. (2 pts) &r
- k. (2 pts) &t

Exam #423 Page: 5 Name:	
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4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #423 Page: 6 Name:	
-------------------------	--

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #423 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #423 Page: 8 Name:	
8	

End of Exam

total points=100

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Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z	section (9.10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	M	N	0	Р	Q	R	S	Τ	U	٧	W	Х	Υ	Z			

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

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Exam #424 Page: 1 Name: _____

- Each exam is numbered (e.g. Exam #137).
- Each pages is numbered (e.g. Page 1, Page 2, etc.)
- The last page clearly says "End of Exam".
- This exam is closed book, closed notes, closed mouth, cell phone off
- You are permitted **one sheet of paper** (max size 8.5x11") on which to write notes
- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam #424 Page: 2 Name:
1.	Please perform the following number conversions.
	a. (2 pts) Convert 010 010 001 from binary to base 8
	b. (2 pts) Convert 001 010 000 from base 2 to octal
	c. (2 pts) Convert 0010 0010 1001 0000 from binary to hexadecimal
	d. (2 pts) Convert 1001 1010 0011 1100 from base 2 to base 16
	e. (2 pts) Convert 1001 1000 1010 0101 from base 2 to base 16
	f. (2 pts) Convert 1000 1111 from binary to base 10
	g. (2 pts) Convert 89 from decimal to base 2
	h. (2 pts) Convert 1010 1101 from binary to decimal
	i. (2 pts) Convert 54 from octal to binary

j. (2 pts) Convert 40 from octal to base 2

	Exam #424 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing lemon kiwi date apple
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[0][6]?
	c. (2 pts) What is the value of argv[2][1]?
	d. (2 pts) What is the value of argv[1][1]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  int b;
  double c;
  char d;
  Node e;
  int *f;
  double *g;
  char *h;
  Node *p;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) p->data
```

- b. (2 pts) &c
- c. (2 pts) c
- d. (2 pts) argc
- e. (2 pts) p->next->next
- f. (2 pts) *f
- g. (2 pts) argv[1][2]
- h. (2 pts) &h
- i. (2 pts) f
- j. (2 pts) argv[0]
- k. (2 pts) p->next

Exam #424 Page: 5 Name:	
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4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #424 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #424 Page: 7 Name: j	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #424 Page: 8 Name:	 	

End of Exam

total points=100

Color in first initial:	А	В	С	D	E	F	G	Н		J	K	L	М	N	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z	section (9.10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z			

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
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Umail Address:	@ umail.ucsb.edu

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Exam #425 Page: 1 Name: _____

- Each exam is numbered (e.g. Exam #137).
- Each pages is numbered (e.g. Page 1, Page 2, etc.)
- The last page clearly says "End of Exam".
- This exam is closed book, closed notes, closed mouth, cell phone off
- You are permitted one sheet of paper (max size 8.5x11") on which to write notes
- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

Exam	n #425 Page: 2 Name:
. Please	e perform the following number conversions.
a.	(2 pts) Convert 141 from base 10 to binary
b.	(2 pts) Convert e279 from base 16 to base 2
c.	(2 pts) Convert 16 from decimal to binary
d.	(2 pts) Convert 2626 from base 16 to base 2
e.	(2 pts) Convert 011 110 111 from base 2 to base 8
f.	(2 pts) Convert 001 010 010 from base 2 to octal
g.	(2 pts) Convert 3 from base 10 to binary
h.	(2 pts) Convert 0011 0101 0001 0000 from base 2 to hexadecimal
i.	(2 pts) Convert 7bc4 from base 16 to base 2
j.	(2 pts) Convert 7 from base 8 to base 2

	Exam #425 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing grape mango lime
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[1][4]?
	c. (2 pts) What is the value of argv[0][6]?
	d. (2 pts) What is the value of argv[2][4]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  char g;
  int h;
  double p;
  Node q;
  char *r;
  int *s;
  double *t;
  Node *w;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) *t
```

- b. (2 pts) &s
- c. (2 pts) w->data
- d. (2 pts) &g
- e. (2 pts) w
- f. (2 pts) argv[0]
- g. (2 pts) argc
- h. (2 pts) argv[1][2]
- i. (2 pts) w->next->next
- j. (2 pts) w->next
- k. (2 pts) g

Exam #425 Page: 5 Name: _	
_	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #425 Page: 6 Name:

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #425 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #425 Page: 8 Name:	

End of Exam

total points=100

Color in first initial:	Α	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Τ	U	٧	W	Х	Υ	Z	section (9.10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	Α	В	С	D	Ε	F	G	Н	Ι	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z			

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
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Exam #426 Page: 1 Name: _____

- Each exam is numbered (e.g. Exam #137).
- Each pages is numbered (e.g. Page 1, Page 2, etc.)
- The last page clearly says "End of Exam".
- This exam is closed book, closed notes, closed mouth, cell phone off
- You are permitted **one sheet of paper** (max size 8.5x11") on which to write notes
- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam #4	26 Page: 2 Name:
1.	. Please pe	rform the following number conversions.
	a. (2	pts) Convert 1011 1111 from binary to base 10
	b. (2	pts) Convert 179 from decimal to binary
	c. (2	pts) Convert 010 001 101 from binary to octal
	d. (2	pts) Convert 100 000 100 from binary to base 8
	e. (2	pts) Convert 1101 0010 from base 2 to decimal
	f. (2	pts) Convert 0101 1011 from base 2 to decimal
	g. (2	pts) Convert 5 from decimal to base 2
	h. (2	pts) Convert 1001 1101 1111 1111 from base 2 to hexadecimal
	i. (2	pts) Convert 1d7e from hexadecimal to binary

j. (2 pts) Convert 010 010 010 from base 2 to octal

	Exam #426 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing lemon kiwi
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[0][4]?
	c. (2 pts) What is the value of argv[1][3]?
	d. (2 pts) What is the value of argv[2][1]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
   char h;
  double p;
  int q;
  Node r;
  char *s;
  double *t;
  int *w;
  Node *x;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) x->next
```

b. (2 pts) x->next->next

c. (2 pts) p

d. (2 pts) argv[1][2]

e. (2 pts) x->data

f. (2 pts) argv[0]

g. (2 pts) &w

h. (2 pts) w

i. (2 pts) *w

j. (2 pts) argc

k. (2 pts) &r

Exam #426 Page: 5 Name: _	
_	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #426 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #426 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result

cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #426 Page: 8 Name:	

End of Exam

total points=100

	_	_	_		_	_	_	_			_	_	_	_	_	_		_	_	_	_	_	_	_	_	_				a
Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Τ	U	۷	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial	
Color in	Α	В	С	D	E	F	G	Н		J	К		М	Ν	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z				ı

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

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Exam #427 Page: 1 Name: ____

- Each exam is numbered (e.g. Exam #137).
- Each pages is numbered (e.g. Page 1, Page 2, etc.)
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- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam #427 Page: 2 Name:
1.	Please perform the following number conversions.
	a. (2 pts) Convert 3ec from hexadecimal to base 2
	b. (2 pts) Convert 6e27 from hexadecimal to base 2
	c. (2 pts) Convert 0011 0100 1010 1111 from base 2 to hexadecimal
	d. (2 pts) Convert 1110 0101 0010 from binary to hexadecimal
	e. (2 pts) Convert b559 from base 16 to binary
	f. (2 pts) Convert 245 from decimal to base 2
	g. (2 pts) Convert 175 from base 10 to base 2
	h. (2 pts) Convert 0010 0101 from binary to decimal
	i. (2 pts) Convert 1110 0111 1001 0110 from base 2 to base 16

j. (2 pts) Convert 111 001 001 from base 2 to octal

	Exam #427 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing fig guava
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[2][0]?
	c. (2 pts) What is the value of argv[0][2]?
	d. (2 pts) What is the value of argv[1][2]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  char e;
  double f;
  int g;
  Node h;
  char *p;
  double *q;
  int *r;
  Node *s;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) s->next->next
```

- b. (2 pts) &g
- c. (2 pts) h
- d. (2 pts) *s
- e. (2 pts) q
- f. (2 pts) s->next
- g. (2 pts) s->data
- h. (2 pts) argv[0]
- i. (2 pts) &p
- j. (2 pts) argv[1][2]
- k. (2 pts) argc

 Exam #427 Page: 5 Name: _	
_	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #427 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #427 Page: 8 Name:	
•	

End of Exam

total points=100

Color in first initial:	А	В	С	D	Е	F	G	Н	I	J	K	L	M	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	M	N	0	Р	Q	R	S	Т	U	٧	W	X	Υ	Z			

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
Haratt Adduses	O constituents and a
Umail Address:	@ umail.ucsb.edu

- Please write your name above AND AT THE TOP OF EVERY PAGE
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Exam #428 Page: 1 Name: _____

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- You are permitted **one sheet of paper** (max size 8.5x11") on which to write notes
- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

1.	Please perform the following number conversions.
	a. (2 pts) Convert 5c48 from hexadecimal to base 2
	b. (2 pts) Convert 16 from decimal to binary
	c. (2 pts) Convert 66 from octal to base 2
	d. (2 pts) Convert 201 from base 10 to binary
	e. (2 pts) Convert 11 from base 8 to base 2
	1 /
	f. (2 pts) Convert 1111 0110 1011 1010 from binary to base 16
	g. (2 pts) Convert 0 from octal to binary
	h. (2 pts) Convert 1100 1100 0010 0001 from binary to hexadecimal
	i. (2 pts) Convert 1101 1010 0000 1001 from binary to hexadecimal
	j. (2 pts) Convert 74 from base 8 to base 2

Exam #428 Page: 2 Name: _____

	Exam #428 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing banana mango fig date
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[2][4]?
	c. (2 pts) What is the value of argv[1][3]?
	d. (2 pts) What is the value of argv[0][1]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  int x;
  double y;
  char z;
  Node a;
  int *b;
  double *c;
  char *d;
  Node *e;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) e->next
```

- b. (2 pts) z
- c. (2 pts) argv[1][2]
- d. (2 pts) &e
- e. (2 pts) argv[0]
- f. (2 pts) e->data
- g. (2 pts) &z
- h. (2 pts) argc
- i. (2 pts) *d
- j. (2 pts) e->next->next
- k. (2 pts) b

Exam #428 Page: 5 Name: _	
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4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #428 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #428 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #428 Page: 8 Name:	
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End of Exam

total points=100

Color in first initial:	А	В	С	D	Е	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Τ	U	٧	W	Х	Υ	Z	section (9.10,11, 12,1,2)	first name initial	last name initial
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	Exam	#429 Page: 2 Name:
1.	Please	perform the following number conversions.
	a.	(2 pts) Convert 101 000 010 from binary to base 8
	b.	(2 pts) Convert 1100 1011 0001 1100 from base 2 to base 16
	c.	(2 pts) Convert 61 from base 8 to base 2
	d.	(2 pts) Convert 85 from base 10 to base 2
	e.	(2 pts) Convert 1001 from base 2 to decimal
	f.	(2 pts) Convert 9097 from base 16 to base 2
	g.	(2 pts) Convert 52 from base 8 to base 2
	h.	(2 pts) Convert 0101 0011 1101 0010 from binary to hexadecimal
	i.	(2 pts) Convert a420 from base 16 to binary

j. (2 pts) Convert 43 from octal to base 2

	Exam #429 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing lemon apple banana
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[1][0]?
	c. (2 pts) What is the value of argv[2][2]?
	d. (2 pts) What is the value of argv[0][5]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  int s;
  char t;
  double w;
  Node x;
  int *y;
  char *z;
  double *a;
  Node *b;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) b->next->next
```

- b. (2 pts) t
- c. (2 pts) argv[0]
- d. (2 pts) b->next
- e. (2 pts) argv[1][2]
- f. (2 pts) b
- g. (2 pts) argc
- h. (2 pts) b->data
- i. (2 pts) &z
- j. (2 pts) &t
- k. (2 pts) *y

Exam #429 Page: 5 Name:	
-	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #429 Page: 6 Name:	
O	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #429 Page	e: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #429 Page: 8 Name:	

End of Exam

total points=100

Color in first initial:	Α	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
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- Please write your name on your notes sheet

Exam #	430 Page: 2 Name:
l. Please p	perform the following number conversions.
a. (2 pts) Convert 64 from base 8 to binary
b. (2 pts) Convert 1001 1100 1010 0001 from base 2 to hexadecimal
c. (2 pts) Convert 1111 1110 from base 2 to base 10
d. (2 pts) Convert b210 from base 16 to binary
e. (2 pts) Convert 95 from base 10 to binary
f. (2 pts) Convert 60 from base 8 to binary
g. (2 pts) Convert 173 from decimal to binary
h. (2 pts) Convert 57 from base 8 to binary
i. (2 pts) Convert 0100 0101 1101 1011 from binary to hexadecimal
j. (2 pts) Convert 56 from base 8 to base 2

	Exam #430 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing guava apple
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[0][1]?
	c. (2 pts) What is the value of argv[1][4]?
	d. (2 pts) What is the value of argv[2][2]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  double d;
  char e;
  int f;
  Node g;
  double *h;
  char *p;
  int *q;
  Node *r;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) r->next->next
```

- b. (2 pts) r->data
- c. (2 pts) q
- d. (2 pts) &d
- e. (2 pts) r->next
- f. (2 pts) argc
- g. (2 pts) &r
- h. (2 pts) *r
- i. (2 pts) argv[1][2]
- j. (2 pts) f
- k. (2 pts) argv[0]

Exam #430 Page: 5 Name: _	
_	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #430 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #430 Page: 7 Name: j	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result

cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #430 Page: 8 Name:	

End of Exam

total points=100

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Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	M	N	0	Р	Q	R	S	Т	U	٧	W	Х	Y	Z	section (9,10,11, 12,1,2)	first name initial	last name initial	
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	Exam	#431 Page: 2 Name:
l.	Please	perform the following number conversions.
	a.	(2 pts) Convert 0001 0111 from base 2 to base 10
	b.	(2 pts) Convert 0101 0110 from binary to base 10
	c.	(2 pts) Convert 1110 1100 from binary to base 10
	d.	(2 pts) Convert 3dfb from base 16 to base 2
	e.	(2 pts) Convert 0100 0010 1000 0111 from base 2 to base 16
	f.	(2 pts) Convert 27 from octal to binary
	g.	(2 pts) Convert 5703 from base 16 to binary
	h.	(2 pts) Convert 0100 0100 from base 2 to decimal
	i.	(2 pts) Convert ff2 from base 16 to base 2

j. (2 pts) Convert 25 from octal to base 2

	Exam #431 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing guava grape
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[1][2]?
	c. (2 pts) What is the value of argv[0][5]?
	d. (2 pts) What is the value of argv[2][0]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  double a;
  char b;
  int c;
  Node d;
  double *e;
  char *f;
  int *g;
  Node *h;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) &f
```

b. (2 pts) h->next

c. (2 pts) f

d. (2 pts) &d

e. (2 pts) *f

f. (2 pts) argv[1][2]

g. (2 pts) argc

h. (2 pts) a

i. (2 pts) argv[0]

j. (2 pts) h->next->next

k. (2 pts) h->data

Exam #431 Page: 5 Name: _	
-	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #431 Page: 6 Name:	
-------------------------	--

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #431 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result

cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

End of Exam

total points=100

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	Exam #432 Page: 2 Name:
۱.	Please perform the following number conversions.
	a. (2 pts) Convert 1101 0011 from binary to decimal
	b. (2 pts) Convert 55 from octal to binary
	c. (2 pts) Convert 65 from octal to base 2
	d. (2 pts) Convert 0111 1100 0100 0111 from binary to hexadecimal
	e. (2 pts) Convert 73 from base 10 to binary
	f. (2 pts) Convert 0010 0010 1001 0001 from binary to base 16
	g. (2 pts) Convert 6aa2 from base 16 to base 2
	h. (2 pts) Convert 1111 0100 1101 0111 from base 2 to base 16
	i. (2 pts) Convert 57 from octal to base 2

j. (2 pts) Convert 111 000 101 from base 2 to octal

	Exam #432 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing fig lemon apple
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[2][0]?
	c. (2 pts) What is the value of argv[0][6]?
	d. (2 pts) What is the value of argv[1][0]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  int h;
  char p;
  double q;
  Node r;
  int *s;
  char *t;
  double *w;
  Node *x;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) x->data
```

b. (2 pts) x->next->next

c. (2 pts) r

d. (2 pts) argv[1][2]

e. (2 pts) w

f. (2 pts) argc

g. (2 pts) x->next

h. (2 pts) &w

i. (2 pts) &q

j. (2 pts) *t

k. (2 pts) argv[0]

Exam #432 Page: 5 Name:	
· ·	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #432 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result

cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #432 Page: 8 Name:	
8	

End of Exam

total points=100

Color in first initial:	А	В	С	D	Ε	F	G	Н	ı	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial	
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CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

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Exam #433 Page: 1 Name: ____

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- Each pages is numbered (e.g. Page 1, Page 2, etc.)
- The last page clearly says "End of Exam".
- This exam is closed book, closed notes, closed mouth, cell phone off
- You are permitted **one sheet of paper** (max size 8.5x11") on which to write notes
- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam #433 Page: 2 Name:
1.	Please perform the following number conversions.
	a. (2 pts) Convert 18bb from base 16 to binary
	b. (2 pts) Convert 110 from base 10 to base 2
	c. (2 pts) Convert c367 from base 16 to binary
	d. (2 pts) Convert 1000 0011 0001 from base 2 to base 16
	e. (2 pts) Convert 0010 1100 1101 1111 from base 2 to hexadecimal
	f. (2 pts) Convert bc6e from hexadecimal to binary
	g. (2 pts) Convert 5 from octal to base 2
	h. (2 pts) Convert 37 from base 8 to base 2
	i. (2 pts) Convert 100 010 011 from binary to octal

j. (2 pts) Convert 011 111 101 from base 2 to octal

	Exam #433 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing apple cherry fig
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[2][5]?
	c. (2 pts) What is the value of argv[0][1]?
	d. (2 pts) What is the value of argv[1][0]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  char e;
  int f;
  double g;
  Node h;
  char *p;
  int *q;
  double *r;
  Node *s;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) argv[0]
```

- b. (2 pts) s->next
- c. (2 pts) argv[1][2]
- d. (2 pts) &q
- e. (2 pts) q
- f. (2 pts) s->next->next
- g. (2 pts) *r
- h. (2 pts) f
- i. (2 pts) &f
- j. (2 pts) argc
- k. (2 pts) s->data

Exam #433 Page: 5 Name: _	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #433 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result

cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #433 Page: 8 Name:	

End of Exam

total points=100

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Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Τ	U	٧	W	Х	Υ	Z			

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
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Umail Address:	@ umail.ucsb.edu

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Exam #434 Page: 1 Name: _____

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- Each pages is numbered (e.g. Page 1, Page 2, etc.)
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- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

cxam	#454 Page: 2 Name:
Please	perform the following number conversions.
a.	(2 pts) Convert 74 from decimal to base 2
b.	(2 pts) Convert 0100 0000 from base 2 to decimal
c.	(2 pts) Convert 1111 1001 from base 2 to base 10
d.	(2 pts) Convert 31 from octal to binary
e.	(2 pts) Convert 40 from base 8 to base 2
f.	(2 pts) Convert 73 from base 8 to binary
g.	(2 pts) Convert 16c1 from base 16 to binary
h.	(2 pts) Convert 71 from octal to base 2
i.	(2 pts) Convert 12 from octal to base 2
	Please a. b. c. d. g.

j. (2 pts) Convert 101 010 110 from base 2 to base 8

	Exam #434 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing mango kiwi
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[1][1]?
	c. (2 pts) What is the value of argv[2][2]?
	d. (2 pts) What is the value of argv[0][1]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  char e;
  double f;
  int g;
  Node h;
  char *p;
  double *q;
  int *r;
  Node *s;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) q
```

d. (2 pts) argv[0]

f. (2 pts) &r

h. (2 pts) s->data

j. (2 pts) &e

Exam #434 Page: 5 Name:	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #434 Page: 6 Name:	
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5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #434 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

End of Exam

total points=100

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Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z	section (9.10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	V	W	X	Υ	Z			

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Exam #435 Page: 1 Name: _____

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- The last page clearly says "End of Exam".
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- You are permitted **one sheet of paper** (max size 8.5x11") on which to write notes
- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam	#435 Page: 2 Name:
1.	Please	perform the following number conversions.
	a.	(2 pts) Convert 1000 1110 1111 1101 from binary to base 16
	b.	(2 pts) Convert 1111 1010 0101 0100 from binary to base 16
	c.	(2 pts) Convert 71 from base 8 to base 2
	d.	(2 pts) Convert 1111 0000 0101 1101 from binary to base 16
	e.	(2 pts) Convert 011 001 100 from base 2 to base 8
	f.	(2 pts) Convert 42 from base 8 to base 2
	g.	(2 pts) Convert c0b2 from hexadecimal to binary
	h.	(2 pts) Convert 109 from decimal to base 2
	i.	(2 pts) Convert 111 101 010 from base 2 to octal

j. (2 pts) Convert 010 001 101 from binary to octal

	Exam #435 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing banana grape cherry date
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[0][0]?
	c. (2 pts) What is the value of argv[2][3]?
	d. (2 pts) What is the value of argv[1][2]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  int b;
  double c;
  char d;
  Node e;
  int *f;
  double *g;
  char *h;
  Node *p;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) p
```

b. (2 pts) b

c. (2 pts) &e

d. (2 pts) argc

e. (2 pts) p->next

f. (2 pts) p->data

g. (2 pts) argv[0]

h. (2 pts) argv[1][2]

i. (2 pts) p->next->next

j. (2 pts) *p

k. (2 pts) &f

Exam #435 Page: 5 Name:		

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #435 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #435 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #435 Page: 8 Name:	

End of Exam

total points=100

Color in first initial:	А	В	С	D	Ε	F	G	Н	Ι	J	K	L	М	N	0	Р	Q	R	S	Τ	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	Α	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Τ	U	٧	W	Х	Υ	Z			

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Exam #436 Page: 1 Name: _____

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- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	cxam	#450 Page: 2 Name:
	_	
1.	Please	perform the following number conversions.
	a.	(2 pts) Convert 71 from octal to base 2
	b.	(2 pts) Convert 9d20 from hexadecimal to binary
	c.	(2 pts) Convert 100 011 010 from base 2 to octal
	d.	(2 pts) Convert 1010 1011 from base 2 to base 10
	e.	(2 pts) Convert 65 from base 8 to binary
	f.	(2 pts) Convert 100 010 100 from binary to base 8
	g.	(2 pts) Convert 100 100 from base 2 to octal
	h.	(2 pts) Convert 0001 0011 1001 1001 from binary to base 16
	i.	(2 pts) Convert 1110 0111 1101 1110 from base 2 to base 16

j. (2 pts) Convert 24 from base 8 to base 2

	Exam #436 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing apple banana date
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[0][2]?
	c. (2 pts) What is the value of argv[2][5]?
	d. (2 pts) What is the value of argv[1][2]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  int s;
  char t;
  double w;
  Node x;
  int *y;
  char *z;
  double *a;
  Node *b;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) argc
```

- b. (2 pts) &x
- c. (2 pts) &b
- d. (2 pts) s
- e. (2 pts) *b
- f. (2 pts) b->data
- g. (2 pts) a
- h. (2 pts) argv[0]
- i. (2 pts) argv[1][2]
- j. (2 pts) b->next->next
- k. (2 pts) b->next

Exam #436 Page: 5 Name: _	
_	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #436 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #436 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #436 Page: 8 Name:	
_	

End of Exam

total points=100

Color in first initial:	Α	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	Α	В	С	D	Ε	F	G	Н	ı	J	Κ	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z			

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

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Exam #437 Page: 1 Name: _____

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Exa	m #437 Page: 2 Name:
. Plea	se perform the following number conversions.
;	a. (2 pts) Convert 0010 1100 from binary to decimal
1	b. (2 pts) Convert 5749 from hexadecimal to base 2
1	c. (2 pts) Convert 011 110 101 from base 2 to octal
(d. (2 pts) Convert 55 from base 10 to binary
,	e. (2 pts) Convert 1011 1010 from base 2 to base 10
	f. (2 pts) Convert 10 from octal to base 2
	g. (2 pts) Convert 101 111 000 from binary to octal
]	h. (2 pts) Convert 46 from base 8 to base 2
	i. (2 pts) Convert 54 from octal to binary

j. (2 pts) Convert 73 from octal to base 2

	Exam #437 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing lime mango guava
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[1][1]?
	c. (2 pts) What is the value of argv[2][2]?
	d. (2 pts) What is the value of argv[0][1]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  int a;
  char b;
  double c;
  Node d;
  int *e;
  char *f;
  double *g;
  Node *h;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) f
```

c. (2 pts) h->next

d. (2 pts) h->data

e. (2 pts) argc

f. (2 pts) &c

g. (2 pts) argv[1][2]

h. (2 pts) &f

i. (2 pts) argv[0]

j. (2 pts) h->next->next

k. (2 pts) c

Exam #437 Page: 5 Name:	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #437 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #437 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result

cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #437 Page: 8 Name:	
0	

End of Exam

total points=100

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Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
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CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

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	Exam #456 Page: 2 Name:
1.	Please perform the following number conversions.
	a. (2 pts) Convert 010 111 011 from base 2 to base 8
	b. (2 pts) Convert 28ce from base 16 to binary
	c. (2 pts) Convert 1011 0001 0100 1000 from base 2 to hexadecimal
	d. (2 pts) Convert 941c from base 16 to binary
	e. (2 pts) Convert 100 000 from base 2 to base 8
	f. (2 pts) Convert 86 from base 10 to binary
	g. (2 pts) Convert 57 from base 8 to base 2
	h. (2 pts) Convert 0100 from binary to base 10
	i. (2 pts) Convert 24 from base 8 to base 2

j. (2 pts) Convert 6 from octal to binary

	Exam #438 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing date guava
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[0][0]?
	c. (2 pts) What is the value of argv[1][3]?
	d. (2 pts) What is the value of argv[2][3]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  double b;
  char c;
  int d;
  Node e;
  double *f;
  char *g;
  int *h;
  Node *p;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) argv[0]
```

- b. (2 pts) &b
- c. (2 pts) p->data
- d. (2 pts) &p
- e. (2 pts) *f
- f. (2 pts) e
- g. (2 pts) p->next
- h. (2 pts) argc
- i. (2 pts) p->next->next
- j. (2 pts) argv[1][2]
- k. (2 pts) f

Exam #438 Page: 5 Name:	_	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #438 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #438 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result

cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #438 Page: 8 Name:	

End of Exam

total points=100

Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
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CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

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Exam #439 Page: 1 Name: _____

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- Please write your name on your notes sheet

	Exam	#439 Page: 2 Name:
1.	Please	perform the following number conversions.
	a.	(2 pts) Convert 162 from base 10 to base 2
	b.	(2 pts) Convert 111 000 101 from base 2 to base 8
	c.	(2 pts) Convert 159 from decimal to binary
	d.	(2 pts) Convert 2006 from base 16 to base 2
	e.	(2 pts) Convert f376 from base 16 to binary
	f.	(2 pts) Convert 1111 0000 from base 2 to decimal
	g.	(2 pts) Convert 32 from octal to binary
	h.	(2 pts) Convert 139 from decimal to base 2
	i.	(2 pts) Convert 111 011 from binary to octal

j. (2 pts) Convert 55 from base 8 to binary

	Exam #439 Page: 3 Name:											
2.	Assume the main function in the program thing.cpp starts with:											
	<pre>int main(int argc, char *argv[]) {</pre>											
	Further, suppose this program is invoked with the following command line:											
	./thing date grape apple fig											
	a. (2 pts) What is the value of argc in this case?											
	b. (2 pts) What is the value of argv[1][1]?											
	c. (2 pts) What is the value of argv[0][0]?											
	d. (2 pts) What is the value of argv[2][4]?											

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  double y;
  int z;
  char a;
  Node b;
  double *c;
  int *d;
  char *e;
  Node *f;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) argv[1][2]
```

- b. (2 pts) &d
- c. (2 pts) &y
- d. (2 pts) f->next->next
- e. (2 pts) f->data
- f. (2 pts) f->next
- g. (2 pts) *d
- h. (2 pts) f
- i. (2 pts) z
- j. (2 pts) argv[0]
- k. (2 pts) argc

Exam #439 Page: 5 Name: _	
_	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #439 Page: 6 Name: _	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #4	39 Page:	7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #439 Page: 8 Name:	
C	

End of Exam

total points=100

Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
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CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

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- Please write your name on your notes sheet

	Exam	#440 Page: 2 Name:
1.	Please	perform the following number conversions.
	a.	(2 pts) Convert 250 from base 10 to base 2
	b.	(2 pts) Convert 1000 0101 1100 0011 from binary to base 16
	c.	(2 pts) Convert 448a from base 16 to base 2
	d.	(2 pts) Convert 1101 1011 from base 2 to base 10
	e.	(2 pts) Convert 011 000 111 from base 2 to base 8
	f.	(2 pts) Convert 74 from base 8 to base 2
	g.	(2 pts) Convert 186 from base 10 to base 2
	h.	(2 pts) Convert 14 from octal to base 2
	i.	(2 pts) Convert 100 000 from base 2 to base 8

j. (2 pts) Convert 1100 0010 0011 0001 from binary to base 16

	Exam #440 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing date mango cherry
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[0][0]?
	c. (2 pts) What is the value of argv[2][0]?
	d. (2 pts) What is the value of argv[1][1]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  char p;
  int q;
  double r;
  Node s;
  char *t;
  int *w;
  double *x;
  Node *y;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) y->next
```

b. (2 pts) argc

c. (2 pts) y->data

d. (2 pts) x

e. (2 pts) argv[0]

f. (2 pts) *w

g. (2 pts) argv[1][2]

h. (2 pts) q

i. (2 pts) &s

j. (2 pts) &t

k. (2 pts) y->next->next

Exam #440 Page: 5 Name: _	
5 -	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #440 Page: 6 Name:	
G	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #	#440	Page:	7	Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

End of Exam

total points=100

,																													
Color in first initial:	А	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z	section (9.10,11, 12,1,2)	first name initial	last name initial
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Exam #441 Page: 1 Name: _____

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- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam #441 Page: 2 Name:
۱.	Please perform the following number conversions.
	a. (2 pts) Convert 17 from base 8 to base 2
	b. (2 pts) Convert 17 from octal to binary
	c. (2 pts) Convert 0011 0010 from binary to base 10
	d. (2 pts) Convert 31 from base 8 to binary
	e. (2 pts) Convert 0100 0111 from base 2 to base 10
	f. (2 pts) Convert 1000 1011 0101 0101 from binary to base 16
	g. (2 pts) Convert 100 from decimal to base 2
	h. (2 pts) Convert 1011 1010 from binary to base 10
	i. (2 pts) Convert 1101 1010 0101 0010 from binary to base 16

j. (2 pts) Convert 0101 1110 0001 1011 from base 2 to hexadecimal

	Exam #441 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing kiwi lime grape
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[1][0]?
	c. (2 pts) What is the value of argv[2][3]?
	d. (2 pts) What is the value of argv[0][5]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  char e;
  int f;
  double g;
  Node h;
  char *p;
  int *q;
  double *r;
  Node *s;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) s->data
```

- b. (2 pts) s->next
- c. (2 pts) argv[1][2]
- d. (2 pts) p
- e. (2 pts) argv[0]
- f. (2 pts) *r
- g. (2 pts) &r
- h. (2 pts) argc
- i. (2 pts) h
- j. (2 pts) s->next->next
- k. (2 pts) &g

Exam #441 Page: 5 Name: _	
-	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #441 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #441 Page: 7 Name: j	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #441 Page: 8 Name:	
8	

End of Exam

total points=100

Color in first initial:	А	В	С	D	Е	F	G	Н		J	K	L	М	N	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z	section (9.10,11, 12,1,2)	first name initial	last name initial
Color in last initial:	А	В	С	D	Е	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z			

CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
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- Please write your name above AND AT THE TOP OF EVERY PAGE
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Exam #442 Page: 1 Name: _____

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- Each pages is numbered (e.g. Page 1, Page 2, etc.)
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- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam #442 Page: 2 Name:
1.	Please perform the following number conversions.
	a. (2 pts) Convert 0111 0001 0001 1000 from binary to hexadecimal
	b. (2 pts) Convert 100 010 from base 2 to octal
	c. (2 pts) Convert 0110 1000 1100 1001 from binary to base 16
	d. (2 pts) Convert 110 000 111 from base 2 to base 8
	e. (2 pts) Convert 157 from base 10 to binary
	f. (2 pts) Convert 1011 1101 from binary to decimal
	g. (2 pts) Convert 011 001 100 from base 2 to octal
	h. (2 pts) Convert 0010 0010 from base 2 to base 10

i. (2 pts) Convert 011 111 000 from base 2 to base 8

j. (2 pts) Convert 42 from base 8 to base 2

	Exam #442 Page: 3 Name:								
2. Assume the main function in the program thing.cpp starts with:									
	<pre>int main(int argc, char *argv[]) {</pre>								
	Further, suppose this program is invoked with the following command line:								
	./thing mango kiwi								
	a. (2 pts) What is the value of argc in this case?								
	b. (2 pts) What is the value of argv[0][4]?								
	c. (2 pts) What is the value of argv[1][2]?								
	d. (2 pts) What is the value of argv[2][1]?								

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
   char x;
  double y;
  int z;
  Node a;
  char *b;
  double *c;
  int *d;
  Node *e;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) e->next->next
```

b. (2 pts) e->next

c. (2 pts) x

d. (2 pts) argv[0]

e. (2 pts) argc

f. (2 pts) &y

g. (2 pts) b

h. (2 pts) argv[1][2]

i. (2 pts) *d

j. (2 pts) e->data

k. (2 pts) &e

Exam #442 Page: 5 Name: _	
-	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #442 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #442 Page: 8 Name: _	
9	

End of Exam

total points=100

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Color in first initial:	Α	В	С	D	Ε	F	G	Н	I	J	K	L	М	N	0	Р	Q	R	S	Т	U	٧	W	Х	Υ	Z	section (9.10,11, 12,1,2)	first name initial	last name initial
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Exam #443 Page: 1 Name: _____

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- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

	Exam	#443 Page: 2 Name:
1.	Please	perform the following number conversions.
	a.	(2 pts) Convert 101 101 011 from base 2 to base 8
	b.	(2 pts) Convert 1100 1011 from base 2 to decimal
	c.	(2 pts) Convert 56a9 from base 16 to base 2
	d.	(2 pts) Convert 010 011 111 from base 2 to octal
	e.	(2 pts) Convert 1000 0000 1010 0100 from base 2 to hexadecimal
	f.	(2 pts) Convert 010 101 111 from base 2 to octal
	g.	(2 pts) Convert 100 000 from binary to base 8
	h.	(2 pts) Convert 1010 1010 1010 1010 from binary to base 16
	i.	(2 pts) Convert 21 from octal to binary

j. (2 pts) Convert 11 from octal to base 2

	Exam #443 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing lemon grape apple banana
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[1][1]?
	c. (2 pts) What is the value of argv[0][5]?
	d. (2 pts) What is the value of argv[2][2]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  double s;
  int t;
  char w;
  Node x;
  double *y;
  int *z;
  char *a;
  Node *b;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) &s
```

- b. (2 pts) argv[1][2]
- c. (2 pts) argc
- d. (2 pts) b->data
- e. (2 pts) x
- f. (2 pts) b->next->next
- g. (2 pts) b->next
- h. (2 pts) *b
- i. (2 pts) &a
- j. (2 pts) b
- k. (2 pts) argv[0]

Exam #443 Page: 5 Name: _	
-	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #443 Page: 6 Name	
------------------------	--

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #443 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #443 Page: 8 Name:	•

End of Exam

total points=100

Color in first initial:	А	В	С	D	E	F	G	Н		J	K		М	N	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
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CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
Haratt Adduses	O constituents and a
Umail Address:	@ umail.ucsb.edu

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Exam #444 Page: 1 Name: _____

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- Please write your name on your notes sheet

	Lxaiii	#444
1.	Please	perform the following number conversions.
	a.	(2 pts) Convert 011 100 from binary to base 8
	b.	(2 pts) Convert 011 011 100 from base 2 to base 8
	c.	(2 pts) Convert 1111 1100 0000 1011 from binary to hexadecimal
	d.	(2 pts) Convert 1011 0100 0010 from binary to hexadecimal
	e.	(2 pts) Convert 111 100 010 from base 2 to base 8
	f.	(2 pts) Convert 0101 1000 from base 2 to decimal
	g.	(2 pts) Convert 61ea from hexadecimal to binary
	h.	(2 pts) Convert 24 from base 8 to base 2
	i.	(2 pts) Convert 16 from base 8 to binary

j. (2 pts) Convert 0011 0001 1101 1010 from base 2 to hexadecimal

	Exam #444 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing guava fig apple kiwi
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[2][2]?
	c. (2 pts) What is the value of argv[0][5]?
	d. (2 pts) What is the value of argv[1][4]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  int e;
  double f;
  char g;
  Node h;
  int *p;
  double *q;
  char *r;
  Node *s;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) s->next
```

- b. (2 pts) g
- c. (2 pts) *s
- d. (2 pts) argv[0]
- e. (2 pts) q
- f. (2 pts) &e
- g. (2 pts) s->data
- h. (2 pts) s->next->next
- i. (2 pts) argv[1][2]
- j. (2 pts) argc
- k. (2 pts) &p

Exam #444 Page: 5 Name:		
<u> </u>		

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

Exam #444 Page: 6 Name:	

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #444 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result

cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

Exam #444 Page: 8 Name:	·	_
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End of Exam

total points=100

Color in first initial:	А	В	С	D	Ε	F	G	Н	Ι	J	K	L	M	N	0	Р	Q	R	S	Τ	U	٧	W	Х	Υ	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
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CS16—Midterm Exam E02, F14, Phill Conrad, UC Santa Barbara Wednesday, 12/03/2014

Name:	
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Exam #445 Page: 1 Name: _____

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	Exam	#445 Page: 2 Name:
1.		perform the following number conversions. (2 pts) Convert 5333 from base 16 to base 2
		(2 pts) Convert 40 from decimal to binary
	c.	(2 pts) Convert 1110 1001 1110 1100 from base 2 to hexadecimal
	d.	(2 pts) Convert 1001 0111 0010 1100 from binary to base 16
	e.	(2 pts) Convert 212 from base 10 to binary
	f.	(2 pts) Convert 1111 0010 from binary to base 10
	g.	(2 pts) Convert bda from base 16 to binary
		(2 pts) Convert 1101 1000 from binary to base 10
	i.	(2 pts) Convert 0010 1010 1110 from binary to base 16

j. (2 pts) Convert 1100 1101 from binary to decimal

	Exam #445 Page: 3 Name:
2.	Assume the main function in the program thing.cpp starts with:
	<pre>int main(int argc, char *argv[]) {</pre>
	Further, suppose this program is invoked with the following command line:
	./thing mango kiwi cherry
	a. (2 pts) What is the value of argc in this case?
	b. (2 pts) What is the value of argv[0][4]?
	c. (2 pts) What is the value of argv[2][0]?
	d. (2 pts) What is the value of argv[1][2]?

3. Given the following declarations:

```
struct Node {
  int data;
  Node *next;
};

int main(int argc, char *argv[]) {
  char b;
  int c;
  double d;
  Node e;
  char *f;
  int *g;
  double *h;
  Node *p;

return 0;
}
```

Specify the type of each of these expressions (e.g. int, int *, etc.

```
a. (2 pts) argc
```

b. (2 pts) p->data

d. (2 pts) p->next

e. (2 pts) f

f. (2 pts) &p

g. (2 pts) &e

h. (2 pts) b

i. (2 pts) p->next->next

j. (2 pts) argv[1][2]

k. (2 pts) argv[0]

Exam #445 Page: 5 Name:	

4. (20 pts) Given the following struct definition:

```
struct Precip {
  int day;
  double inches;
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

```
// days is an array with a month's worth of Precip structs
// numDays is the number of days in that month
// return the total rainfall of all days in the month.
double totalRainfall(Precip *days, int numDays);
```

Answer in the space below

5. (20 pts) Given the following struct for representing Complex numbers (which have a real part and an imaginary part):

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

Write the full function definition for a function that would have the following prototype. The prameters to the function and the return value should be as described in the comment.

Note that you MUST follow the struct definition given here; pay close attention to the names of both the members of the struct, and the parameters to the function.

Also note that the parameter p is a *pointer* and write your code accordingly.

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

Answer in the space below.

Exam #445 Page: 7 Name:	

6. (10 pts) Given the same struct definition as in the previous problem:

```
// Complex number, e.g. a+bi
struct Complex {
  double real; // the a part
  double imag; // the b part
};
```

And given the same function prototype:

```
// p is a pointer to a Complex number struct
// a is the real part of the number.
// b is the imag part (coefficient of i)
void initComplex(Complex *p, double a, double b);
```

And given the following prototype, for a function you are NOT required to write, but may assume is ALREADY DEFINED:

```
string complexToString(Complex c);
```

Fill in the missing line of code in the main program below after the comment that says TODO.

You may assume that the header file complex.h contains the struct definition and the function prototype given above.

```
#include <iostream>
using namespace std;

#include "complex.h"

int main() {
   Complex c;

   // TODO: Write a function call to initComplex that sets
   // the real part to 2.3 and the imaginary part to 4.5

// Show result
   cout << "c=" << complexToString(c) << endl;
   return 0;
}</pre>
```

End of Exam

total points=100