

Name:

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IN-CLASS EXERCISE

Terminology

- "empty linked list" - just a variable with the value NULL (for our way of doing linked lists)
- "head" - the first node
- "tail" - the last node; .next field must be NULL

Create an empty linked list

size=0 {}

Code

```
int main(int argc, char** argv) {

    return EXIT_SUCCESS;
}
```

Picture

Memory:

Stack

addr	type*	name*	value	part	↳
200	int	argc	1	arguments	main(...)
204	char**	argv	→ {"/foo"}		
212	void*			return addr.	
220				local vars	

Heap

addr	value	↳
400		

Add a node with value 10

size=1 {10}

Code

```
int main(int argc, char** argv) {
    // (continued)
```

Picture

```
    return EXIT_SUCCESS;
}
```

Memory:

Stack

addr	type*	name*	value	part	↳
200	int	argc	1	arguments	main(...)
204	char**	argv	→ {"/foo"}		
212	void*			return addr.	
220				local vars	

Heap

addr	value	↳
400		

Add a node with value 11

size=2 {10, 11}

Code

```
int main(int argc, char** argv) {  
    // (continued)
```

Picture



```
        return EXIT_SUCCESS;  
    }
```

Memory:

Stack

addr	type*	name*	value	part	↳
200	int	argc	1	arguments	main(...)
204	char**	argv	→ {"/foo"}		
212	void*			return addr.	
220				local vars	

Heap

addr	value	↳
400		

Remove last node

size=1 {10}

Code

```
int main(int argc, char** argv) {  
    // (continued)
```

Picture



```
        return EXIT_SUCCESS;  
    }
```

Memory:

Stack

addr	type*	name*	value	part	↳
200	int	argc	1	arguments	main(...)
204	char**	argv	→ {"/foo"}		
212	void*			return addr.	
220				local vars	

Heap

addr	value	↳
400		

* Note: type and name are not actually stored in memory. They are listed here only for our understanding.

Assume sizeof(int)==4, sizeof(char)==1, and sizeof(void*)==8. The program was run as "/foo".