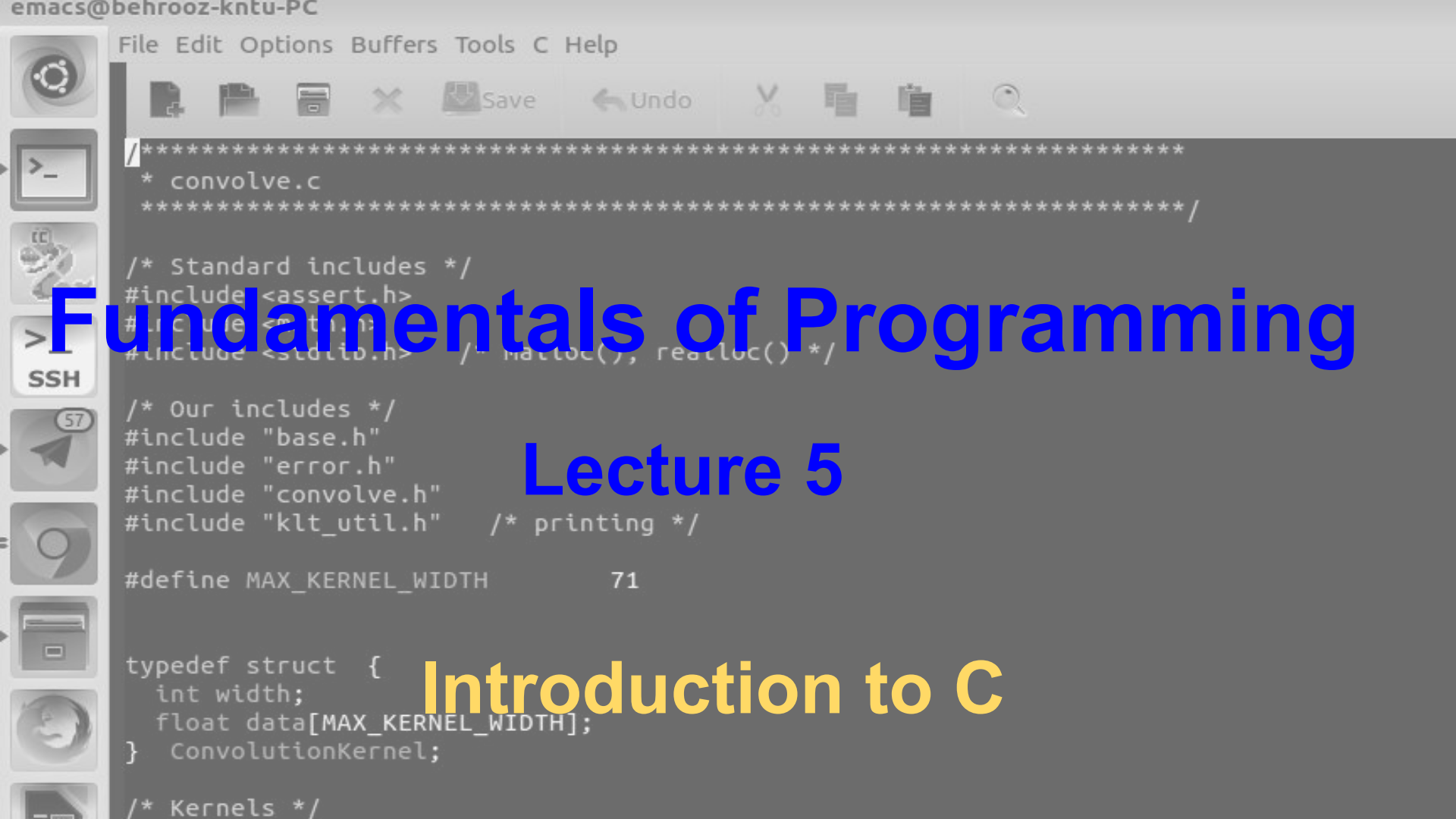

emacs@behrooz-kntu-PC
File Edit Options Buffers Tools C Help
Save
Undo
/* convolve.c */
/* Standard includes */
#include <assert.h>
/* Our includes */
#include "base.h"
#include "error.h"
#include "convolve.h"
#include "klt_util.h" /* printing */
#define MAX_KERNEL_WIDTH 71
typedef struct {
int width;
float data[MAX_KERNEL_WIDTH];
} ConvolutionKernel;
/* Kernels */
SSH
Fundamentals of Programming
Lecture 5
Introduction to C

Your first (?) C program

prog1.c

```c
#include <stdio.h>

int main() {

  puts("Salaaam! Chetoriiiii!!!???");

  return 0;
}
```

Your first C program

prog1.c

```c
#include <stdio.h>

int main() {

  puts("Salaaam! Chetoriiiii!!!???");

  return 0;
}
```

```
CS@kntu:lecture5$ gcc prog1.c
CS@kntu:lecture5$ ./a.out
Salaaam! Chetoriiiii!!!???
CS@kntu:lecture5$
```

Your first C program

prog2.c

```c
#include <stdio.h>

int main() {

  printf("Salaaam! Chetoriiiii!!!???");

  return 0;
}
```

Your first C program

prog2.c

```c
#include <stdio.h>

int main() {

  printf("Salaaam! Chetoriiiii!!!???");

  return 0;
}
```

```
CS@kntu:lecture5$ gcc prog2.c
CS@kntu:lecture5$ ./a.out
Salaaam! Chetoriiiii!!!???CS@kntu:lecture5$
CS@kntu:lecture5$ _
```

Your first C program

prog3.c

```c
#include <stdio.h>

int main() {

  printf("Salaaam! Chetoriiiii!!!???\n");

  return 0;
}
```

Your first C program

prog3.c

```c
#include <stdio.h>

int main() {

  printf("Salaaam! Chetoriiiii!!!???\n");

  return 0;
}
```

```
CS@kntu:lecture5$ gcc prog3.c
CS@kntu:lecture5$ ./a.out
Salaaam! Chetoriiiii!!!???
CS@kntu:lecture5$
```

Your first C program

prog4.c

```c
#include <stdio.h>

int main() {

  printf("Salaaam! Chetoriiiii!!!???\n\n\n\n");

  return 0;
}
```

Your first C program

prog4.c

```c
#include <stdio.h>

int main() {

  printf("Salaaam! Chetoriiiii!!!???\n\n\n\n");

  return 0;
}
```

```
CS@kntu:lecture5$ gcc prog4.c
CS@kntu:lecture5$ ./a.out
Salaaam! Chetoriiiii!!!???



CS@kntu:lecture5$
```

Your first C program

K. N. Toosi
University of Technology

prog4.c

```c
#include <stdio.h>

int main() {

  printf("Salaaam! Chetoriiiii!!!???\n\n\n\n");

  return 0;
}
```

```
CS@kntu:lecture5$ gcc prog4.c -o prog4
CS@kntu:lecture5$
CS@kntu:lecture5$ ./prog4
Salaaam! Chetoriiiii!!!???



CS@kntu:lecture5$
```

Variables

متغیرها

variables.c

```
char c;
unsigned char uc;
signed char sc;

short sh;
unsigned short ush;
signed short ssh;

int i;
unsigned int ui;
signed int si;

long l;
unsigned long ul;
signed long sl;
```

Variables

متغیرها

variables.c

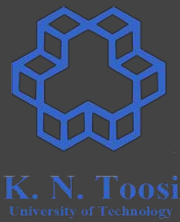
```
short sh;
unsigned short ush;
signed short ssh;

int i;
unsigned int ui;
signed int si;

long l;
unsigned long ul;
signed long sl;

float f;
double d;
```

Variables: the assignment operator (=)

prog5.c

```c
#include <stdio.h>

int main() {
  int a;

  a = -1;

  printf("Salaaam! %d Chetor?\n", a);

  return 0;
}
```

Variables: the assignment operator (=)



prog5.c

```c
#include <stdio.h>

int main() {
  int a;

  a = -1;

  printf("Salaaam! %d Chetor?\n", a);

  return 0;
}
```

```
CS@kntu:lecture5$ gcc prog5.c
CS@kntu:lecture5$
CS@kntu:lecture5$ ./a.out
Salaaam! -1 Chetor?
```

Variables: the assignment operator (=)

prog6.c

```c
#include <stdio.h>

int main() {

  int a;

  a = 10;

  printf("%d\n",a);

  return 0;
}
```

Variables: the assignment operator (=)

prog6.c

```c
#include <stdio.h>

int main() {

  int a;

  a = 10;

  printf("%d\n",a);

  return 0;
}
```

```
CS@kntu:lecture5$ gcc prog6.c
CS@kntu:lecture5$
CS@kntu:lecture5$
CS@kntu:lecture5$ ./a.out
10
CS@kntu:lecture5$
```

the printf function formats

%c	character
%d	decimal (integer) number (base 10)
%e	exponential floating-point number
%f	floating-point number
%i	integer (base 10)
%o	octal number (base 8)
%s	a string of characters
%u	unsigned decimal (integer) number
%x	number in hexadecimal (base 16)
%%	print a percent sign
\%	print a percent sign

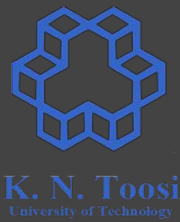
https://alvinalexander.com/programming/printf-format-cheat-sheet

reading variables

prog7.c

```c
#include <stdio.h>

int main() {

  int a;

  scanf("%d", &a);

  printf("%d\n",a);

  return 0;
}
```

reading variables



prog7.c

```c
#include <stdio.h>

int main() {

  int a;

  scanf("%d", &a);

  printf("%d\n",a);

  return 0;
}
```

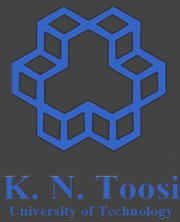
```
CS@kntu:lecture5$ gcc prog7.c
CS@kntu:lecture5$
CS@kntu:lecture5$ ./a.out
12
12
CS@kntu:lecture5$
```

reading variables

prog8.c

```c
#include <stdio.h>

int main() {

  int a;

  scanf("%d", &a);

  printf("%d\n",a*a);

  return 0;
}
```

reading variables



prog8.c

```c
#include <stdio.h>

int main() {

  int a;

  scanf("%d", &a);

  printf("%d\n",a*a);

  return 0;
}
```

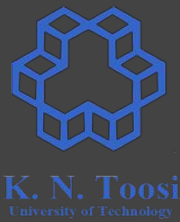
```
CS@kntu:lecture5$ ./a.out
12
144
CS@kntu:lecture5$
CS@kntu:lecture5$
```

reading variables

prog9.c

```c
#include <stdio.h>

int main() {

  int a,b;

  scanf("%d", &a);
  scanf("%d", &b);

  printf("a=%d, b=%d, a+b=%d, a-b=%d\n", a, b, a+b, a-b);

  return 0;
}
```

reading variables



prog9.c

```c
#include <stdio.h>

int main() {

  int a,b;

  scanf("%d", &a);
  scanf("%d", &b);

  printf("a=%d, b=%d, a+b=%d, a-b=%d\n", a, b, a+b, a-b);

  return 0;
}
```

```
CS@kntu:lecture5$ gcc prog9.c && ./a.out
12
13
a=12, b=13, a+b=25, a-b=-1
CS@kntu:lecture5$
CS@kntu:lecture5$
```

reading variables

prog10.c

```c
#include <stdio.h>

int main() {

  int a,b;

  scanf("%d %d", &a, &b);

  printf("a=%d, b=%d, a+b=%d, a-b=%d\n", a, b, a+b, a-b);

  return 0;
}
```

reading variables

prog10.c

```c
#include <stdio.h>

int main() {

  int a,b;

  scanf("%d %d", &a, &b);

  printf("a=%d, b=%d, a+b=%d, a-b=%d\n", a, b, a+b, a-b);

  return 0;
}
```

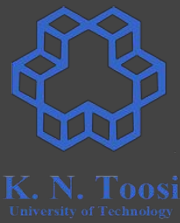
```
CS@kntu:lecture5$ gcc prog10.c && ./a.out
12
13
a=12, b=13, a+b=25, a-b=-1
CS@kntu:lecture5$
```

Printing prompts

prompt.c

```c
int main() {
  int a,b;

  printf("Enter a: ");
  scanf("%d", &a);

  printf("Enter b: ");
  scanf("%d", &b);

  printf("%d + %d = %d\n", a, b, a+b);

  return 0;
}
```

Printing prompts



prompt.c

```c
int main() {
  int a,b;

  printf("Enter a: ");
  scanf("%d", &a);

  printf("Enter b: ");
  scanf("%d", &b);

  printf("%d + %d = %d\n", a, b, a+b);

  return 0;
}
```

```
CS@kntu:lecture7$ gcc prompt.c && ./a.out
Enter a: 12
Enter b: 16
12 + 16 = 28
CS@kntu:lecture7$
```

Printing prompts

prompt.c

```c
int main() {
  int a,b;

  printf("Enter a: ");
  scanf("%d", &a);

  printf("Enter b: ");
  scanf("%d", &b);

  printf("%d + %d = %d\n", a, b, a+b);

  return 0;
}
```

Be careful about autocorrection systems (homework, exam). Do not print prompts unless requested in the question.

```
CS@kntu:lecture7$ gcc prompt.c && ./a.out
Enter a: 12
Enter b: 16
12 + 16 = 28
CS@kntu:lecture7$
```

decision making تصمیم گیری

prog11.c

```c
#include <stdio.h>

int main() {

  int a,b;

  scanf("%d %d", &a, &b);

  if (a > b) {
    printf("a is bigger than b\n");
  }

  return 0;
}
```

decision making تصمیم گیری

prog11.c

```c
#include <stdio.h>

int main() {

  int a,b;

  scanf("%d %d", &a, &b);

  if (a > b) {
    printf("a is bigger than b\n");
  }

  return 0;
}
```

decision making تصمیم گیری

K. N. Toosi
University of Technology

prog11.c

```c
#include <stdio.h>

int main() {

  int a,b;

  scanf("%d %d", &a, &b);

  if (a > b) {
    printf("a is bigger than b\n");
  }

  return 0;
}
```

```
CS@kntu:lecture5$ gcc prog11.c && ./a.out
12
10
a is bigger than b
CS@kntu:lecture5$
CS@kntu:lecture5$ gcc prog11.c && ./a.out
12
14
CS@kntu:lecture5$ gcc prog11.c && ./a.out
12
12
CS@kntu:lecture5$
```

decision making تصمیم گیری

prog12.c

```c
#include <stdio.h>

int main() {
  int a,b;

  scanf("%d %d", &a, &b);

  if (a > b) {
    printf("a is bigger than b\n");
  }
  else {
    printf("a is not bigger than b\n");
  }

  return 0;
}
```