Welcome to today's meeting

```
eb48 90d0 bc00 7cfb 5007 501f fcbe 1b7c
bf1b 0650 57b9 e501 f3a4 cbbd be07 b104
386e 007c 0975 1383 c510 e2f4 cd18 8bf5
83c6 1049 7419 382c 74f6 a0b5 07b4 0302
ff00 0020 0100 0000 0002 fa80 ca80 ea53
7c00 0031 c08e d88e d0bc 0020 fba0 407c
3cff 7402 88c2 52be 797d e834 01f6 c280
7454 b441 bbaa 55cd 135a 5272 4981 fb55
aa75 43a0 417c 84c0 7505 83e1 0174 3766
8b4c 10be 057c c644 ff01 668b 1e44 7cc7
0410 00c7 4402 0100 6689 5c08 c744 0600
7066 31c0 8944 0466 8944 0cb4 42cd 1372
05bb 0070 eb7d b408 cd13 730a f6c2 800f
84f0 00e9 8d00 be05 7cc6 44ff 0066 31c0
88f0 4066 8944 0431 d288 cac1 e202 88e8
88f4 4089 4408 31c0 88d0 c0e8 0266 8904
```

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Obroni Computer Club – Conditionals in Python

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September 19th 2006

Today's topics

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1. Prelude
   - Our next steps

2. Conditionals in Python
   - The **if**-statement
   - Degree Fahrenheit and Degree Celcius
   - Odd or Even
   - The **while** statement
   - A simple game: Guesswork

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What can we expect now?

Our programs can now save data and interact with the user, and they can caluclate.

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What we need now is a way to make descisions. So we will learn about **if** and **while**. With that, we can write our first little game (a guessing game).

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What we need now is a way to make descisions. So we will learn about **if** and **while**. With that, we can write our first little game (a guessing game).

Next week we will look into how we can work with more complex data, and use that to write a little text-based maze.

Conditionals in Python

What if, and what if not?

Programs often have to make descision, and do different things depending on their outcome. For that, we need the **if**-statement:

---

if-statement

```
1  if  condition :
2     some code
3  else :
4     some other code
```

The **else** part is optional.
If the condition is true, then "some code" is run, otherwise "some other code is run".

An **if** example.

```
1  age = int(raw_input("What's_my_age_again?_"))
2  if age < 18:
3      print("You_are_kid-ding,_right?")
4      print("Want_a_cracker?_Polly_always_wants_one ...")
5  else:
6      print("Ouuu,_biig_boy ...")
7      print("you_don't_look_that_old_anyway!")
8  print("Now,_where_was_I...")
```

Note the indentation, that is how you group instructions in python! You can use whatever number of spaces you want, but you have to be consistent within one group. Watch out for that, it's quite a stumbling block at the beginning.

Demonstration: A useful program

I will demonstrate this to you: A Fahrenheit $\leftrightarrow$ Celcius converter, that asks the user for the direction of conversion.

The formula

$$\vartheta_F = \frac{9}{5} \cdot \vartheta_C + 32$$

$$\vartheta_C = \frac{5}{9} \cdot (\vartheta_F - 32)$$

Demonstration: The code

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```python
1  #!/usr/bin/python
2
3  what = raw_input("[F]ahrenheit to Celcius " \
4                   "or [C]elcius to Fahrenheit? ")
5  inp = int(raw_input("How many degrees? "))
6  if what == "f" or what == "F":
7      out = 5*(inp - 32)/9
8  else:
9      out = 9*inp/5 + 32
10 if out < 0:
11     print "This is too cold, it can not be in Ghana."
12 print "The result is "+str(out)+" degrees."
```

Exercise: Odd or even?

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A small warmup exercise:

Odd or even number

Write a program that reads a number from the user and then says if the number is odd or even.

Hint: Use the modulos operator "%" to get the remainder when dividing by 2 to determine if the number is odd or even.

Solution

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```
1  #!/usr/bin/python
2
3  inp = int(raw_input("Please enter a number: "))
4  if inp % 2 == 1:
5     print "The number " +inp+ " is odd."
6  else:
7     print "The number " +inp+ " is even."
```

While we are at it

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So far, our programs ran just for a short while. But we want progras that run a bit longer! For that, we need loops: Statements that repeat a certain part of the code. The simplest kind of loop is the **while**-loop.

The **while**-loop

```
1  while condition :
2     some code
```

"some code" is repeatetly run, until the condition is false.

Example: Annoying kids...

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```python
1  #!/usr/bin/python
2
3  answer = "no"
4  while (answer != "yes"):
5      print("I am bored")
6      answer = raw_input("Are we there yet? ")
7  print("I don't like it here.")
```

Exercise: Let's play a game

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It's time for our very first game:

Number guessing

Write a program that reads a number from the user. It then prints enough empty lines to hide the input. The other play can then enter guesses for the number, and the program will tell him if he has guessed too high or low, until the guess is right.

Extra exercise for the fast ones: Write the game with reversed roles, i.e., the program guesses a number that the user thought of, and the user types if the guess was too high or too low.

Solution: Guesswork

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```python
1  #!/usr/bin/python
2
3  num = int(raw_input("The secret number: "))
4  print  # a lot of these!
5  guess = None  # No value yet
6  while guess != num:
7    guess = int(raw_input("What's your guess? "))
8    if guess > num:
9      print "Too high"
10   if guess < num:
11     print "Too low"
12
13 print "You got it!"
```

Any Questions?

Good bye 'till next time

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```
66a1 447c 6631 d266 f734 8854 0a66 31d2
66f7 7404 8854 0b89 440c 3b44 087d 3c8a
540d c0e2 068a 4c0a fec1 08d1 8a6c 0c5a
8a74 0bbb 0070 8ec3 31db b801 02cd 1372
2a8c c38e 0648 7c60 1eb9 0001 8edb 31f6
31ff fcf3 a51f 61ff 2642 7cbe 7f7d e840
00eb 0ebe 847d e838 00eb 06be 8e7d e830
00be 937d e82a 00eb fe47 5255 4220 0047
656f 6d00 4861 7264 2044 6973 6b00 5265
6164 0020 4572 726f 7200 bb01 00b4 0ecd
10ac 3c00 75f4 c300 0000 0000 0000 0000
0000 0000 0000 0000 5de2 5de2 0000 0001
0100 070f ffff 3f00 0000 c1bf 8103 000f
ffff 050f ffff 00c0 8103 70f5 2601 0000
0000 0000 0000 0000 0000 0000 0000 0000
0000 0000 0000 0000 0000 0000 0000 55aa
```