

BIOINFORMATICS INTERNSHIP

Class three

BIOINFORMATIC FUN FACT OF THE DAY

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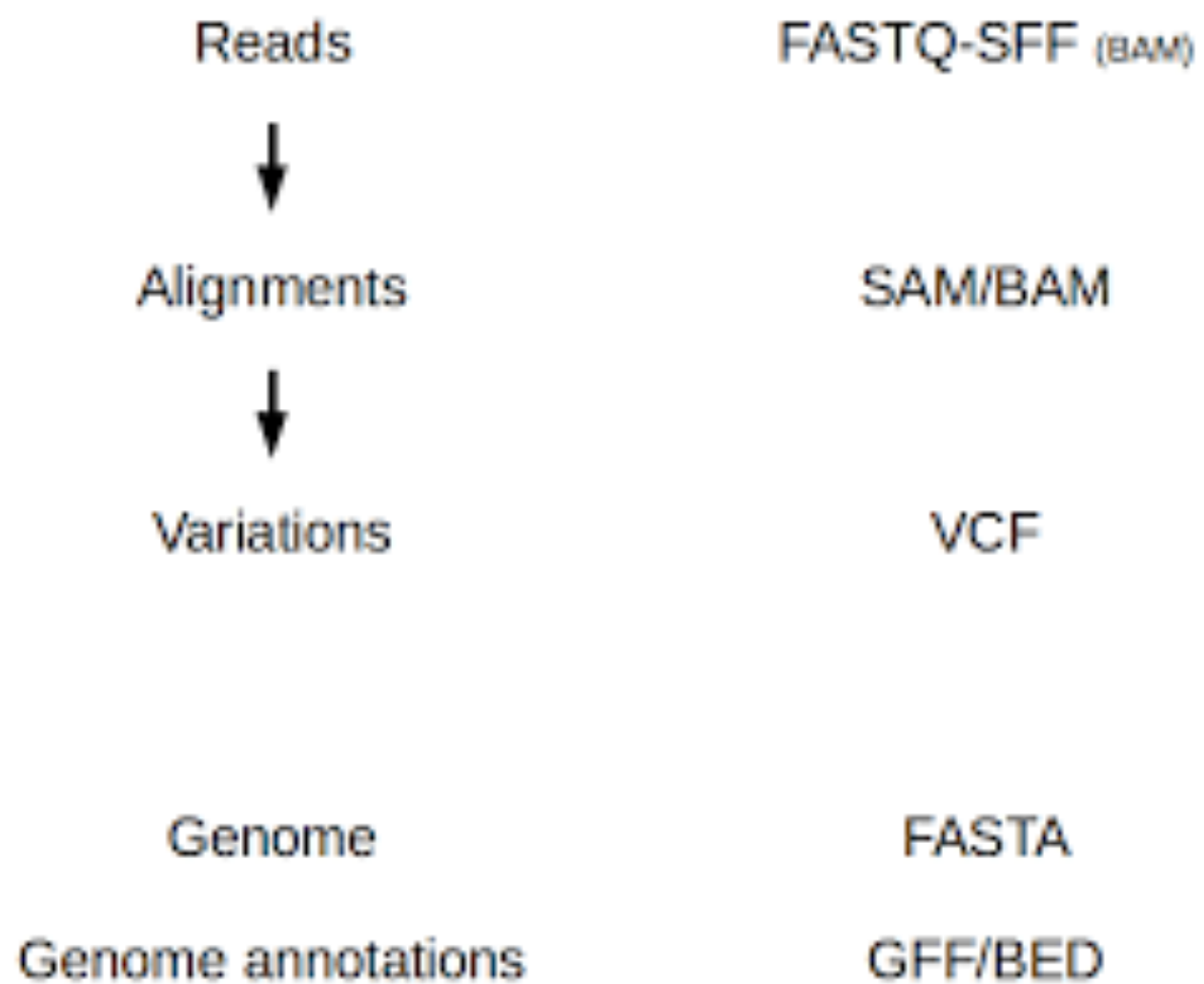
Early hacker



GOAL I OUTLINE: CREATING A FASTA FILE

- Objective:
 - Write a function that creates a file and writes to it a nucleotide sequence
 - Write a function that creates a nucleotide sequence
- Nucleotide sequence parameters:
 - Must be 300 bp (characters)
 - Contain at least three unique repetitive regions (can be preassigned)

FILE TYPES



FILE TYPES

- <https://bioinformatics.stackexchange.com/questions/14/what-is-the-difference-between-fasta-fastq-and-sam-file-formats>

FUNCTIONS

- Definition = code of function
- Call = to run the function, referring to it in code
- Return = send single value back to line calling function. If looking to return multiple values use a collection.

FUNCTION

- Syntax:

```
def <function name> (<parameter 1, 2, ..>):
```

```
    <line 1 of code>
```

```
    <line 2 of code>
```

```
    return <value>
```

FUNCTIONS

- Scope
 - Local variables = those created within a function, cannot be accessed outside of function
 - Global variables = those created outside of function

FILE IO

- Allows python to read, write and parse through files directly without needing user to set up stdin/stdout
- Use linux security
- Use with try/ expect blocks
- “import FileIO”
- “import Random”
- “import OS”

FILE IO

- “with open:” = does not require you to close file due to with
- Modes:
 - r = open file for reading
 - w = open file for writing (existing will be erased)
 - a = open file for appending (will create if not preexisting)
 - r+ = open file for reading and writing

EXCEPTION HANDLING

- Python cannot handle :
 - Syntax errors
 - Exceptions (semantic errors particular to the operation)
- “try:”
 - Code will be monitored for occurrence of an exception during run
 - Once exception happens remainder of try block is skipped
- “except as:”
 - Block follows try block indicating what the script should do once exception is encountered
 - Can have multiple
- Error types:
 - ValueError = an invalid value has been specified
 - TypeError = an invalid data type was specified
 - OverflowError = a result was too large to be stored into variable
 - IOError = a file related error occurred