MATLAB

for-loop

Assume we want to find a value of $\sum_{k=1}^{n} 3k^{23} + k^7$. If n is small, say $n = 3$, then in MATLAB

```
Val = (3*1^23 + 1^7) + (3*2^23 + 2^7) + (3*3^23 + 3^7);
```

can be an answer.

But if n is much bigger, like $n = 10^5$, then how can we compute the value? By using the *for loop*, we can do this:

```
Val = 0;    n = 10^5;
for k = 1:n
    Val = Val + 3*k^23 + k^7;
end
```

if-else statement

```
if [conditional statement (∗)]
        [commands] to be conducted if (∗) is True.
else
        [commands] to be conducted if (∗) is False.
end
```

if-else if statement

```
if [conditional statement (∗)]
    [commands] to be conducted if (∗) is True.
else
    if [conditional statement (∗∗)]
        [commands] to be conducted
        if (∗) is False and (∗∗) is True.
    end
end
```

if-else if-else statement

```
if [conditional statement (*)]
     [commands] to be conducted if (*) is True.
else
     if [conditional statement (**)]
          [commands] to be conducted
          if (*) is False and (**) is True.
     else

          [commands] to be conducted
          if (*) is False and (**) is False.
     end
end
```

while loop

while [conditional statement (∗)]

     [commands] to be executed while (∗) is True.

end

We can solve the problem of second slide by using the `while` loop

```
Val = 0;    n = 10^5;
k = 0;
while k < n
    k = k + 1;
    Val = Val + 3*k^23 + k^7;
end
```