Exercise 01a - Theory Answers

1. **Explain the pros and cons of using macros like**

   1 #define U_prv(i) buffers[0][(i)+1]

   2 #define U(i) buffers[1][(i)+1]

   3 #define U_nxt(i) buffers[2][(i)+1]

for simulations like the wave equation.

Macros improve code readability and performance by avoiding function call overhead but make debugging harder and lack type safety, which can lead to errors.

2. **Mention at least one other boundary condition that could have been applied instead of the Neumann (reflective) boundary condition.**

A possible boundary condition can be a constant value (e.g., zero) at the domain edges.

3. **What happens if you don't allocate memory in T1?**

Without memory allocation, the simulation will crash or behave unpredictably since it tries to access memory that "doesn't" exist.

4. **What is the difference between**

   1 float const *a;

   and

   1 float *const b; ?

'*float const *a*' is a pointer to a constant float (can't modify the value), while '*float *const b*' is a constant pointer to a float (can't change the pointer, but can modify the value).